- - - Index to Contents, April, 1937 - - -

The Annual Index to Vol. LI appears on the last eight pages of the December, 1936, issue

Bridges
Towing, Fire and Cleaning Service on the Trans-Bay Bridge ... 83

Business Machines
County Treasurer's Office, Frankfort, Ind. . 89

City Manager Plan
Recent City Manager Appointments ... 109
Council-Manager Improvement Expands ... 115

Civic Organizations
The Montclair Association Helps Better Government ... 103

Conferences and Conventions
When and Where ... 125

Finance and Taxation
Tax Limitation Places the Cart Before the Horse ... 56
Detroit's Accounting System for Water-Works Customers ... 57
1936 Taxes Reduced 29.6 Per Cent ... 89
Public Housing and Taxes ... 93
The Municipal Bond Market ... 109
Municipal Pay Checks Becoming Normal ... 115

Fire Prevention and Control
Six Fast Hose Trucks of New York City ... 17
Fire-Alarm Policy and Figures in New York City ... 17
Towing, Fire and Cleaning Service on the Trans-Bay Bridge ... 83

Forestry
Do Your City's Trees Reflect Your City's Character? ... 73
Tree Surgery with Rubber ... 131

Forward Steps
Items Contributed by Officials and Others ... 103

Government and Administration
Cities Improve Labor Employment Policies ... 115

Health
What is Epidemiology? ... 19
Health Department Regulates Wells ... 19
Fort Wayne Fights Social Diseases ... 19

Housing
Public Housing and Taxes ... 93
1937 Tour of European Housing ... 109

Improving Municipal Administration
Items from Public Administration Clearing House ... 115

Law, Municipal
Manual of Chicago Department of Law ... 107

Legal Decisions
The City's Legal Rights and Duties ... 119

Maps
Humorous Map of U. S. ... 74
Town Reports and Town Maps ... 107

News and Illustrations
Hints for Officials ... 129

Outdoor Lighting
On the Trans-Bay Bridge ... 83
Public Tired of Dull Street Lighting ... 137
Mercury Vapor in Austin's Towers ... 137
Current Averages $28 Per Unit in Middletown, N. Y. ... 138
The More You Spend, the Fewer You Kill. 138
Dim Streets; Horses and Buggies ... 138

Parks and Recreation
Black Dirt for Chicago Parks ... 75
Recreational Development of a River Valley 85
Kenosha's New Stadium and Fieldhouse ... 103
Give the Normal Citizen a Break ... 109
All-Steel Grandstands ... 131
Cutter for Weeds and Grass ... 133
Paddle Tennis for City Playgrounds ... 135

Planning
Graduate Scholarships in City Planning ... 70
Recreational Development of a River Valley 85
A Triumph in Subdivision Planning ... 105
Zoning and Planning Notes ... 117

Police and Crime
Radio a Good Right Arm for Police ... 62
Police Signal and Telephone Cable ... 129

Power Plants
Los Angeles Buys Electric System ... 71

Public Utilities
Gas Masks in Duluth ... 17
When a City Needs Power ... 17
Portable Power at Flooded Louisville ... 69
Los Angeles Buys Local Gas Company's Electric System ... 71
Get Your Wires Out of Sight at Small Cost. 101

Public Works
A P.W.G.S. Suggested by Ickes ... 15
City of Moles Plans New Tunnel ... 15
Cities Urged to "Program" Public Works ... 62

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Public Works Administration
New Federal Policy as Reported Would Hamstring PWA ... 5
Mayors Appeal to President Roosevelt ... 5

Publications
New Books and Pamphlets ... 121

Radio
A Good Right Arm for Police ... 62

Reports, Municipal
Town Reports and Town Maps ... 107

Schools
Open-Air School Pupils Benefit from Natural and Artificial Sunlight ... 107

Sewers and Sewage Treatment
Compressed Air and Mechanical Aeration of Sewage Compared ... 11
Chlorination of Sludge ... 11
Sewage Plant Problem ... 11
River Flowing Backwards Won't Stay Put 15
Three Methods of Aeration in One Activated Sludge Plant ... 63
New Chemical Treatment Plant ... 66

Street Cleaning and Snow Removal
Snow Removal, Gold Hill, Nev. ... 13
Snow Removal, Lake Arrowhead, Calif. ... 13
Towing, Fire and Cleaning Service on the Trans-Bay Bridge ... 83

Streets
Maintenance in Los Angeles ... 15
Rubber Paving Blocks in Sweden ... 15
Repaving Program of Harrisburg, Pa. ... 55
Publicizing Pavement Ages ... 70
Repaving with Brick, Using WPA Labor ... 99
Heating Kettle for Tar and Asphalt ... 133
Bituminous Mixers for Patches ... 133

Traffic
How Can the Pedestrian Be Saved? ... 111
Look Behind Buildings for Parking Space ... 113
National Safety Council Awards Plaques ... 113
Community Safety ... 113
The More You Spend, the Fewer You Kill 138

Transportation
Cooperation More Effective Than Legal Rights ... 7

Waste Collection and Disposal
Increased Hog Feeding in Los Angeles District ... 13
Small Trucks Cut Costs of Collection ... 13
Income from the Refuse of Jacksonville ... 13
Garbage Disposal in Topeka, Kansas ... 13
New Chemical Treatment Plant ... 66
Improved Incinerator Operation ... 68
Cooperative Refuse Collection Shows Economies in Knoxville ... 79

Water Supply and Water Works
Troubles of a Water Department ... 9
Fluorides in Water Supplies ... 9
New Storage Reservoir in the West ... 9
River Flowing Backwards Won't Stay Put 15
Gas Masks in Duluth ... 17
Health Department Regulates Wells ... 19
Detroit's Accounting System for Water-Works Customers ... 57
$9 for Advertising the Water Works ... 81
Water-Works Improvement Continues ... 87
Heavy-Duty Disc Type Meters ... 129
Coatings for Steel Water Lines ... 131
New Bronze Alloy for Water Valves ... 135

Works Progress Administration
Adequate WPA Funds for Next Year Urged 5
Mayors Appeal to President Roosevelt ... 5
Black Dirt for Chicago Parks ... 75
Repaving with Brick, Using WPA Labor ... 99

See pages 21, 22, 24, 121, 123, 125 for catalogs and publications on municipal and civic subjects

For Index to Advertisements see page 142

EMCO Meter and Nordstrom Valves on Gas Lines from Digester to Storage Tank
NORDSTROM
lubricated PLUG VALVES
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Measure the amount of gas wasted.
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Measure cold water for various uses about the disposal plant.
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Nordstrom Lubricated Plug Valves are being written into construction specifications by leading sanitation engineers whose experience with these valves has proven them to be always easy to turn, trouble free and leak resistant. Their quick, quarter-turn operation and ability to stand up under the most difficult conditions of corrosion and erosion make them especially adapted to the requirements of sewage treatment work and vastly superior to other types of valves which, due to their inherent construction, cause trouble and expense after a short time.

Ordinary meters won't operate economically and satisfactorily in sewage disposal plants. The character of the substances handled is such that corrosion and erosion will soon attack the operating parts unless they are of special materials and design. All EMCO meters are specially constructed from materials which in laboratory tests and on numerous installations have proven resistant to this destructive action.

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The PWA and WPA Situation

New Federal Policy as Reported Would Hamstring PWA

IN a statement issued March 23 for the United States Conference of Mayors, the situation regarding the PWA is described as follows by Paul V. Betters, Executive Director:

"The reported change in Federal policy regarding the PWA under which the *Federal grant* is to be based on the amount of wages paid to *relief* workers on such projects is a polite way of killing the present PWA program. Up to the present time the grant has been based on 45 per cent of the total cost of a project. Under the proposed arrangement it will be impossible for a city to compute just how much the Federal grant would amount to, since there is no way of knowing just how much relief labor is used on a project until it is completed. However, due to the high amount of *skilled* labor required on most PWA projects, and the fact that the present relief rolls do not comprise a large number of skilled workers, it is certain the amount of the grant under the new scheme would not even begin to approach 45 per cent.

"When the matter of changing the basis of the Federal Grant was before the Senate last June, it was the almost unanimous opinion of the Senate that the 45 per cent grant basis would have to be maintained if the PWA program were to succeed. All of the project applications which were then and are still now pending before the PWA were submitted by the cities, at the invitation of the Government, on the 45 per cent basis. A great number represented projects which had been passed upon by the voters *in bond referendums*, and incorporated in the referendum was the 45-55 per cent arrangement. Any change to whatever other basis simply *invalidates* these bond elections. And the cities are thus prevented from cooperating with the Government in the national reemployment drive. Other cities having projects pending are up to their constitutional and statutory debt limit, and any reduction in the grant makes it impossible for these communities to proceed under the new plan.

"The Conference of Mayors is accordingly advising its member cities involved in this situation that if the proposals now advanced are adopted it will be impossible for them to participate in the PWA program authorized by Congress. It is the judgment of the Conference also that for all practical purposes the PWA cannot function to any material extent under the proposed change.

"It is to be regretted that the intent of Congress is not being considered in the present situation. Senator Johnson of California foresaw the possibility of just such a situation as is now before us when the matter was under debate in the Senate. But his proposal to incorporate in the last PWA appropriation bill a provision taking away discretionary powers of the Administration to change or modify the 45 per cent grant basis was not adopted because of the feeling on the part of the Senate that such a change in policy would never be carried out. Now that the change has unofficially been reported, we regret that many of the cities will not be able to participate and cooperate with the Government."

Adequate WPA Funds for Next Year Urged by Six Governors

THE Governors of six industrial states, following a conference on February 28, for discussion of their relief and unemployment problems, addressed a communication to President Roosevelt expressing as their unanimous opinion:

"1. In accordance with the policy advocated by you in 1935, the Federal Government should offer work relief and other forms of employment to all the needy employables.

"2. We believe that WPA workers should not be removed from the rolls until they can be absorbed in private industry.

"3. When WPA workers are removed, they should be replaced by other needy employables taken from the relief rolls.

"4. In order to encourage WPA workers to accept private employment, procedure should be simplified to assure reemployment on WPA rolls when private employment of them ceases.

"5. The cost of relief to employables cannot be borne by local units of government, and we protest against the imposition of this burden onto the states and local units of government.

"6. It is important for the Federal and state governments to cooperate in a program that will encourage industry to provide additional opportunities for private employment for those on WPA and state relief rolls as far as possible."

Bearing on this situation, the Philadelphia Regional Conference of the United States Conference of Mayors on March 13 voted unanimously that the accepted formula of Federal responsibility for the employables and city and state responsibility for the unemployables constitutes a sound division of responsibility and one required by the conditions confronting the nation at this time. On the basis of its studies, the Conference expressed the belief that the minimum average number of employable relief persons for the fiscal year 1938 will be 2,800,000, which, on the basis of the present Federal cost per month per worker requires an appropriation to the WPA alone of approximately $2,200,000,000 to provide WPA work for employable *relief* persons; additional funds being required if aid is to be provided for the unemployed group who do not now technically qualify.

In advocating their action, the Conference urged that, in order to achieve sound planning and economy in the works program, funds should be appropriated for a full year's work.

Mayors Appeal to President Roosevelt

ON March 31, through its President, Mayor LaGuardia of New York, the United States Conference of Mayors appealed to President Roosevelt to advocate the $2,200,000,000 WPA appropriation suggested above, and also urged his "aggressive support" of the Wagner-Steagall measure for Federal aid to low-rent housing. The statement said:

"We trust that minor differences of opinion will not prevent speedy enactment of the Wagner-Steagall Housing Bill. As you have pointed out on more than one occasion, one-third of our people are now 'ill-housed.' This bill offers cities an opportunity to clean out slums and to build decent housing for persons of low incomes. We ask your aggressive support of this measure."

Continuance of the PWA program was also urged:

"On the basis of justice to those cities which, at the invitation of the Government, submitted PWA applications, we believe that additional allotments to eligible PWA projects should be made in accordance with the action of Congress last June. Approximately $150,000,000 is still available for this purpose.

"It is recognized that the Government has the right to insist that relief labor be employed on such projects, and projects not eligible on this basis may justly be ruled out.

"However, on those projects fulfilling this qualification let us point out that the maintenance of the 45 per cent Federal grant is mandatory if the program is to succeed. All of the projects now pending were submitted on this basis. Many were bond election projects.

"There was incorporated in these referenda the 45-55 per cent arrangement, and any deviation therefrom simply invalidates such elections. In other cases any reduction in the amount of the grant would prohibit the city from participating due to the existing charter, statutory and constitutional debt-limit situation.

"We ask, therefore, that up to the amount of PWA funds still available the Government make additional allotments for projects on which relief labor may be employed, and that the 45 per cent Federal grant be maintained."

Her FIRST Telephone Call
A BRAND-NEW CUSTOMER used the telephone this morning. Betty Sue called up that nice little girl around the corner.
Every day, hundreds of Betty Sues speak their first sentences into the telephone. Just little folks, with casual, friendly greetings to each other. Yet their calls are handled as quickly and efficiently as if they concerned the most important affairs of Mother and Daddy. For there is no distinction in telephone service. Its benefits are available to all — old and young, rich and poor alike. To Betty Sue, the telephone may some day become commonplace. But it is never that to the workers in the Bell System.
There is constant, never-ending search for ways to improve the speed, clarity and efficiency of your telephone calls . . . to provide the most service, and the best, at the lowest possible cost.
BELL TELEPHONE SYSTEM

The Local Transit Problem

Cooperation More Effective Than Legal Rights

LAST month it was shown here that 53 out of 101 reporting cities have local-transportation needs that have not been satisfied.

An engineer connected with a prominent vehicle manufacturer writes: "I think it would be found that no one desires to improve service more than the transit company itself."

One of the most encouraging developments of the present transit problem is that in many instances the company and the city are already working together in fruitful harmony. Mayor Harry S. Wheeler of Newport, R. I., says: "The close cooperation between the city government and the local transportation companies has brought a feeling of mutual understanding. This is reflected in the willingness of the companies at all times to do the bidding of the city government. In an extreme case involving a large expenditure of money, the State Department of Public Utilities may be appealed to and in that case an order of the Department may be issued compelling the companies to do that which the city advises to be necessary."

No feeling of impotence at Newport, nor of abject dependence on a state commission. Yet 30 miles away, the Mayor of Cranston, with nearly twice the population of Newport, says his city has no power whatsoever to bring about any improvement in local transportation. Leon E. Smith, of East Providence, also disclaims power, but says: "From time to time we have a conference with transportation officials and discuss needed changes. These are very helpful and much is accomplished." New facilities are provided, "usually at the town's request."

CAR WASHED IN 55 SECONDS; G. E. ELECTRIC EYE TURNS WATER ON AND OFF

After much research and study THE AMERICAN CITY announced that *genuine cooperation between municipalities and transit companies is the road to modern local transportation.*

Does Fort Smith, Ark., ever take steps to see that better schedules or vehicles are provided? Mayor Jim Jordan says the city has the power, but that such action "has not been necessary."

Mayor John A. Bengston of Rock Island, Ill., states that the "Tri-City Railway Co. has recently abandoned its trolley cars and substituted buses, all of a new, modern type. This was done by the company without any action of the City Council." This improvement has been instituted also in Davenport, Iowa, by this same company and "Everything is very satisfactory now," says Mayor Merle F. Wells.

Mayor R. B. Slippy of Waterloo, Iowa, says: "Street cars have been replaced by modern buses, and lines have been extended. This takes care of the present needs very nicely. *We are requiring the street-car company to add new bus lines on trial and report result.*"

City Manager L. V. Bean of Paducah, Ky., says that the city's charter furnishes ample power for establishing and improving facilities and means of transportation, and that last summer steps were taken and "the utility company cooperated with us."

L. B. Haworth, of Lowell, Mass., states that the Eastern Massachusetts Street Railway Co. has shown every disposition to modernize equipment. On informal request of the Mayor's office, one route was restored in October, 1936."

City Manager Edward C. Rutz of Kalamazoo, Mich., says, "Company is very cooperative." Mayor George L. Harvey of Port Huron states: "We have a bus service which is working very satisfactorily. In talking with the Manager yesterday, I find they have put on two extra buses, have purchased 27 buses on their own initiative and have ordered two more, and we feel that our bus service is in very good condition." City Manager L. P. Cookingham of Saginaw says: "The transportation company is making a study of the city's needs and shows a willingness to meet the requirements with new buses, new routes and speedier service."

Mayor Denton Pearsall, Jr., of Mount Vernon, N. Y., says, "Service has always been satisfactory and company maintains best of equipment."

DETROIT HAS MORE THAN 500 OF THESE 21-PASSENGER FORD BUSES

Street Railway Commissioner E. L. Graumlich of Toledo, Ohio, states that a service-at-cost franchise gives the city full power and that "replacement of equipment has usually been done by the company with the approval of the city." The Community Traction Co. operates 80 street cars, 140 motor-buses and 8 trackless trolleys. This equipment is well maintained. "Buses and trackless trolleys were obtained by a cooperative attitude between the city and company."

Mayor M. W. Gross of Allentown, Pa., says that the city has had no occasion to request better facilities, and there have been "no complaints of inefficient service on our transit system (Lehigh Valley Transit Co.)"

Mayor C. K. Quin of San Antonio, Texas, states that the last time the city took steps to improve conditions was just prior to the elimination of the trolley cars. "Since then, we have collaborated with the company in amending schedules. The company is very progressive."

City Engineer W. D. Beers and Mayor E. B. Erwin of Salt Lake City, Utah, state that they have "one of the outstanding transportation systems of the country. The Utah Light and Traction Co. is continually making improvements, and plans to replace all track-operated equipment with trolley and gasoline buses within three years."

City Manager R. W. B. Hart of Lynchburg, Va., explains that new facilities are provided by company and city "working together."

This is the bright side of the shield and shows what is possible universally. Archaic managers say: "They can't make us do it; we can beat them in the courts." Archaic city officials say: "That's not our job; it's up to the state." City Manager P. M. Burdette of Asheville, N. C., says: "Cooperation is more effective than legal rights."

MUSKEGON

SUMMER SPRINKLING LOAD PLAYED HOB WITH WATER PRESSURE . . .

. . . Now, *thanks to ELEVATED STORAGE,* this Michigan city has water to "sell*!"

MUSKEGON, MICHIGAN, is one of those fortunate cities that "combines business with pleasure." Located in the heart of a popular vacation-land, it ranks as a leading summer resort center—yet it is also well-known for its thriving industries. But, as might be expected, this favorable combination of circumstances has not been without some attendant difficulties. Among them has been the problem of maintaining an adequate supply of water—particularly in summer when Muskegon householders turn out *en masse* to sprinkle spacious lawns and gardens. The way in which the problem was solved may be of interest to other cities.

Muskegon gets its water from Lake Michigan at a point several miles distant from the center of the city; thus comparatively long transmission mains are involved. As the city increased in size, it gradually reached a point where these mains lacked the capacity to handle peak loads, although the average load remained well within their limits.

It was at this point that Muskegon decided to install the 1,000,000-gallon radial-cone bottom tank shown above. It is located across town from the pumping station. During peak-demand periods, water flows into the distribution system from two directions—from the tank and from the pumping station. During off-peak periods there is enough surplus flow from the pumping station to build up a reserve in the tank.

This is just one example of how large-capacity elevated storage is solving modern water supply problems. For the complete story, write our nearest office.

**As a result of the increased capacity available since the above tank was installed, Muskegon now supplies water to the nearby town of North Muskegon.*

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Birmingham . . . . . 1502 N. Fiftieth Street
Dallas . . . . . 1105 Liberty Bank Bldg.
San Francisco . . . . . 1033 Rialto Bldg.
Houston . . . . . 2919 Main Street
Tulsa . . . . . 1625 Hunt Bldg.
Los Angeles . . . . . 1403 Wm. Fox Bldg.

Fabricating plants in CHICAGO, BIRMINGHAM, and GREENVILLE, PA.

Water-Works Troubles and Joys

What Are the Troubles of a Water Department?

JUST how are the innumerable trouble calls of a Water Department divided between such things as calling on delinquents, repairing leaks, etc.? Here is the way they line up in the village of Oak Park, Ill., according to the latest Annual Report of the Water Department.

REPORT OF TROUBLE, INSPECTIONS, ETC. OAK PARK, ILL.

Nature of Calls	Total Calls
Services turned on for new customers	584
Shut off, accounts closed	750
Investigation for leakage	549
Meters not registering	1,496
Get quarterly reading	1,750
Meter leaks	365
Miscellaneous complaints	123
Miscellaneous repairs by laborers	162
Re-read meters	1,270
Meter dial repaired	1
Meters incorrectly installed	10
Meters frozen	45
Meters tested by request	44
No meter set	20
Poor pressure	16
Parties in without application	75
Calls to collect deposit	22
Water shut off—vacant	137
Delinquents called on	713
Delinquents shut off	4
No water	1
Periodical test	17
Shut off temporarily	54
Glass broken in meter	46
Total	8,254

Significance of Fluorides in Water Supplies

SINCE we have received inquiries on the damage which may occur from apparently insignificant quantities of fluorides in water supplies, we are presenting this abstract of a paper delivered by Joseph M. Sanchis, Chief Chemist and Bacteriologist, Bureau of Water Works and Supply, Los Angeles, Calif., before the American Water Works Association.

Although there is as yet no complete understanding of the potential toxicity of fluorine in the various forms in which it may enter the body, nor of the extent to which the fluorine ingested through articles of diet other than water contributes to the development of mottled enamel, sufficient data have been accumulated to justify a few broad generalizations on this phase of the problem. Again, the lack of adequate means of analysis, in this case for the determination of fluorine in food products, has been the greatest handicap facing the workers in this field.

Margaret C. Smith and Ruth M. Leverton, in an article published in 1934 in *Industrial and Engineering Chemistry* on the comparative toxicity of fluorine compounds, state that the fluorine ingested in the form of highly soluble inorganic compounds, such as sodium fluoride, is more toxic than equivalent amounts entering the body in a less soluble form, such as calcium fluoride. At the same time it may be inferred, from our knowledge of the physiological behavior of other elements, that the organically combined fluorine will be much less harmful than equivalent amounts ingested in an insoluble inorganic form. If this supposition is proved to be true by future experiments, it is easy to see that the fluorides in drinking water, through their highly ionized state, could easily become an important contributing factor in the production of mottled enamel.

For a time, it seemed as though the increasing use of fluorine compounds in insecticidal mixtures for the spraying of fruits and vegetables threatened to become as great, if not a greater, menace to public health than that of high fluoride water supplies. However, since this man-made source of contamination is now being materially reduced through education and legislative action, it ceases to have the significance attached to the fluorides in drinking water which have proved so difficult to bring down to a safe level by practical and economical methods of treatment.

Fluorine may also gain access to fruits and vegetables through the root system, when present in the soil solution. Recent investigations have shown that the fluorine content of plants irrigated with high fluoride water, or grown in fluoride-bearing soils, was greater than that of controls cultivated in a relatively fluorine-free medium. Lack of knowledge as to the forms in which this fluorine is present, however, makes difficult the evaluation of its possible toxic effects.

Somewhat better understood is the fate of fluorine in the animal body. While studying the effect of feeding fluoride-bearing phosphates on the fluorine content of organs and tissues of dairy cows, Chang, Phillips and Hart noticed that, although fluorine was found in all normal tissues examined, the greatest quantity accompanied calcium and phosphorous deposition. Thus the bones and the teeth contained large quantities of fluorine, while the more active organs, such as the liver, kidney, heart muscle, and other tissues studied, showed only small amounts. An increase in fluorides in the feed always resulted in an increased storage of this element in the bones and teeth.

It has also been shown that the fluorine content of cow's milk is not appreciably increased as a result of feeling fluorides in enough quantities to produce a serious toxic effect upon the cows themselves. The importance of these findings can be readily appreciated when it is realized that large amounts of dairy products are used in the diet of children during the period of calcification of the permanent teeth.

It appears, then, that although little trouble should be expected from animal products, it is possible that the fluorine derived from vegetable origin may contribute appreciably to the production of mottled enamel.

Under these circumstances, the fluoride content of drinking water acquires special significance as a factor in the prevention of proper tooth calcification. Although one part per million is now being advocated as a safe upper limit, it seems that an intelligent evaluation of the toxic power of a given amount of fluoride in the water supply will be possible only after all the doubtful points of the mottled-enamel problem are better understood.

Creating a New Storage Reservoir in the West

COMPACTING EARTH FILL ON THE SAN FRANCISCO SUNSET RESERVOIR PROJECT

An International TD-40 diesel TracTracTor is shown pulling a tandem hitch of Le Tourneau sheepsfoot rollers on the $2,500,000 project which will furnish 93,720,000 gallons storage [illegible] of San Francisco, just beyond the new Golden Gate Bridge

THERE IS ALWAYS
One Outstanding Leader

To be recognized as a leader is a compliment to ability. It may be the gray goose who leads his flock southward,—a thoroughbred that wins the derby—or an organization that stands foremost in its field. In well drilling and pump engineering, the distinction of leadership has long been the proud possession of Layne. We have a world-wide organization, every modern facility, and a proven record of success that enables us to do any size job with speed, efficiency and satisfaction. On any water problem that faces you, we offer prompt and dependable engineering advice. There is no obligation. Call in a Layne man and let him give you facts.

Municipal executives may obtain interesting literature by writing Layne & Bowler, Inc., Dept. B, Memphis, Tenn.

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LAYNE PUMPS
LAYNE WELL WATER SYSTEMS

Sewage-Treatment Problems

Compressed Air and Mechanical Aeration of Sewage Compared

USING mechanical aeration by brushes, and compressed air aeration with porous tubes, G. M. Ridenour and C. N. Henderson, Research Engineer and Laboratory Assistant, respectively, Division of Water and Sewage Research, New Jersey Agricultural Experiment Station, studied the relative purification efficiencies and operating costs of mechanical aeration as compared with spiral circulation by compressed air. They frankly admit that "a single broad statement of the comparative merits of the two types cannot be made. Each type possesses certain advantages for one situation which may be offset by accompanying disadvantages for another."

From the standpoint of purification, the results were approximately equal with respect to both degree and rate of purification with the use of high concentrations of activated sludge solids. With lower amounts of solids, the purification results were likewise equal, with the exception of suspended solids removal. The suspended solids content of the effluent from the brush aerator was greater than that of the effluent from the compressed air tank, with the use of lower amounts of activated sludge solids. All other indices of purification, such as B.O.D. and NH-reduction and nitrate formation, were the same for each type of aeration under all equivalent conditions of operation.

The most striking difference in operating characteristics of the two types of aeration was found to be in the settleability of the activated sludge floc. With the use of compressed air, the settleability of the activated floc was three times as great as the settleability of sludge formed with the brushes. This is of particular importance, since the activated sludge must be treated in auxiliary units, and the capacities of the units are thereby affected by the volume occupied by the sludge.

Average circulation velocities were approximately the same for each type of aeration with equal power consumption, but surface and bottom velocities were higher for the brush type of aeration. The difference in velocity of circulation at the surface was reflected in more economical oxygen supply to the aerator. Under equal conditions of operation the brushes supplied nearly 100 per cent more residual dissolved oxygen to the tanks than did the air, with the same power consumption. In addition, the distribution of dissolved oxygen was very uniform with the brushes as compared with a tendency for core formation with the porous tubes.

From the standpoint of operating cost of purification, the data showed mechanical aeration by brushes to be the more economical. On the basis of average conditions of operation and equal purification of sewage throughout the year, it was found that power consumption was from 18 to 22 per cent less with brushes than with compressed air.

Operating superintendence was the same for each type of aeration. Labor cost of aerator attendance was also approximately the same. Because of the lighter sludge floc formed by the brush aerator, a slightly increased cost of waste sludge disposal can be expected for equal results, due to the increased volume of sludge.

The capital cost of aerator construction was approximately the same for either type of aeration. The difference in cost of apparatus for application of the air to the sewage was only a fraction of a per cent of the total plant cost. This difference in capital cost might be extended, however, to a major amount by the necessity for increased capacity in other plant units due to the lighter sludge formed with the brush aeration. The more voluminous sludge requires greater final settling tank capacity, greater capacity of sludge return equipment, larger sludge digestion tanks, and more sludge drying bed area. The extent of this additional cost would be difficult to estimate for general application because of difference in character of sewage, method of operation, facilities for concentration of the sludge, etc., but experiences at this plant dictate that at least 50 per cent greater sludge digestion, sludge return, and sludge drying-bed capacity would be required for the lighter sludge of the mechanical brush aerators. Also, for the final settling tank a detention period of at least 2½ hours is required.

The applicability of the two types of aeration depends upon the nature of operating conditions. Where power costs are of importance, the mechanical aeration by brushes is the best by reason of lesser power consumption. Where both operation costs and capital costs are of importance, the increased cost of plant construction due to larger capacities required for digestion tanks, sand drying beds and final settling tanks for the brush type of aeration should be balanced against the decreased cost of plant operation.

Circumstances where the brush type of aeration would be superior, by virtue of lesser power costs, would be: (1) in simple aeration; (2) with standby or auxiliary aeration facilities; or (3) where the volume of sludge handled is not of usual importance.

Chlorination of Sludge

STUDIES of the chlorination of activated sludge conducted at the Marlboro, N. J., activated sludge plant on the use of chlorine in the control of bulky sludge, consisted of chlorinating the return sludge in amounts up to 72 per cent of the chlorine demand, or 0.46 per cent on the dry solids basis. Information was secured in detail of the effect of chlorine on the purification of the sewage, on the settleability of the activated sludge floc, and on filamentous organisms.

Under the conditions existing at this 1,300,000-gallon plant handling hospital sewage, the following results were obtained:

1. Chlorine applied to the return sludge in amounts as high as 72 per cent of the chlorine demand, or 0.46 per cent on the dry solids basis, had no effect toward increasing the sludge settling index.
2. The filamentous character of the sludge remained unchanged as far as could be observed from microscopical examinations.
3. Purification of the sewage liquor was practically unaffected by chlorine.
4. The chlorine demand of the sludge decreased during the period of chlorination from a maximum amount at the beginning to a minimum at the end of chlorination.

—From a paper by G. M. Ridenour, C. N. Henderson and H. B. Schulhoff, Research Engineer, Laboratory Assistant, and Bacteriologist, respectively, Division of Water and Sewage Research, Agricultural Experiment Station, New Brunswick, N. J., in *Sewage Works Journal*.

Sewage-Plant Problem

DURING the unprecedented cold snap in Southern California in January, 1937, citrus growers found it necessary to smudge extensively to protect the fruit trees, with the result that throughout the citrus growing areas the thick, oily, sooty smoke was so dense that visibility was limited to less than 100 feet, according to a report of the California Sewage Works Association, in *Western City*.

In the city of Ontario, Calif., the diffuser plates of the activated sludge plant were rapidly clogged during the heavy smudging, in spite of the fact that the air was strained at the intake of the blower through several thicknesses of cloth which were changed at frequent intervals. The report continues: "During the heaviest smudging the air pressure at the blower jumped in one night from 5 to 7½ pounds, and it appeared probable that the pressure would continue to increase rapidly. The obvious thing to do, of course, would be to drain the tanks, remove the diffuser plates and clean them with some form of solvent. This the Service Manager was disinclined to do, and instead of removing the plates and washing them in the solvent, he left the plates in place and injected two gallons of aviation gasoline into the air stream some distance below the blower. The gasoline was applied in a small stream over a period of some eight hours, with the remarkable result that the oil and carbon particles entering the diffuser plates with the air stream were released and pressure at the blower dropped back to normal."

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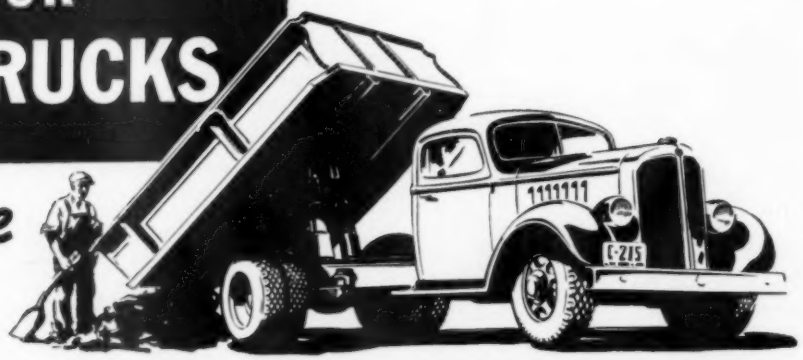
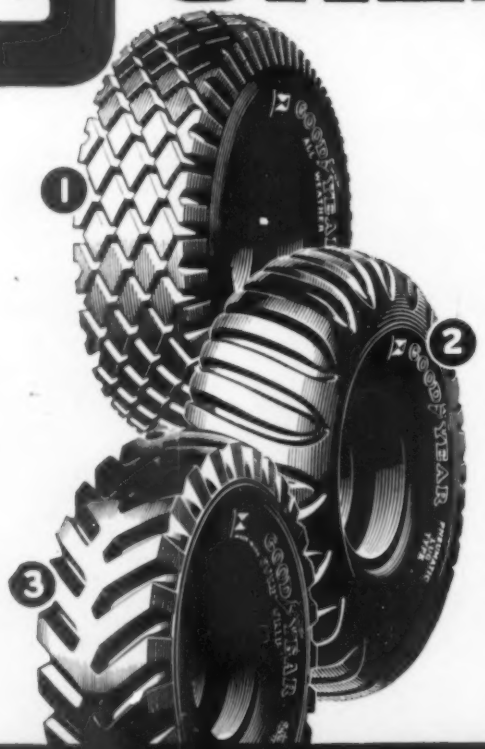


3 GREAT TIRES



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TIRES FOR DUMP TRUCKS

Municipal Refuse Disposal—Snow Removal

Increased Hog Feeding in Los Angeles District

HOG feeding has become of more importance as a means of garbage disposal, because of the greater interest among farmers in garbage feeding due to the current high price of corn and pork. The city of Los Angeles, Calif., has recently received bids for a three-year contract for disposal by hog feeding of about 10 per cent of the city's garbage, which is collected by city trucks and brought to a central transfer station. The contractor's bid was based on a price of $1.11 per ton for residential-type garbage, with hog prices ranging between 9 cents and 11 cents per pound in the local market, the sale price of the garbage varying with the price of hogs.

Under the proposed contract, the contractor would pay nothing when hogs sell for less than 5 cents per pound; 30 per cent of the base price when hogs sell between 5 and 7 cents; 65 per cent when between 7 and 9 cents; 100 per cent from 9 to 11 cents; 135 per cent from 11 to 13 cents; 170 per cent from 13 to 15 cents; and 225 per cent of the base price when hogs sell for more than 15 cents per pound. In the fiscal year ending June 30, 1937, the city of Los Angeles will receive an income of about $175,000 for its garbage, or slightly more than 90 cents per ton.

—From the Second Report of a Committee of the Sanitary Engineering Division, American Society of Civil Engineers, presented January, 1937.

SNOW REMOVAL IS AS IMPORTANT TO THE CITIZENS OF GOLDHILL, NEVADA, AS IT IS TO CITIZENS OF CHICAGO OR NEW YORK

An Angledozer mounted on an RD7 tractor is usually considered a road-building combination, but it has proved its effectiveness for snow removal on many occasions

Garbage Disposal in Topeka, Kansas

THE collection of garbage in Topeka is done by contract with the Kaw Valley Livestock Co. Collection is made daily in the business district and twice a week in the residential area of the city. The cost of this service for 1936 was reduced by reason of a new contract effective March 1. The per capita cost of this service was $0.34 in 1936, and $0.39 in 1935. The collection of leaves, ashes, tin cans and rubbish is not included in the contract mentioned above, as that service is rendered by the Street Department.

SNOW BRINGS THREAT OF FIRE WHEN STREETS ARE BLOCKED WITH DRIFTS

In January, 1937, Lake Arrowhead, Calif., only 30 minutes from the orange groves, was covered with an 8-foot snowfall completely paralyzing traffic, business and the recreational activities of the resort. A Twenty-Two tractor rescued snowbound trucks within the village, and powerful snow-plows broke through to reopen traffic

Small Trucks Cut Costs of Refuse Collection

THE policy of replacing large motor trucks with more economical smaller trucks in Los Angeles, Calif., for the collection of garbage and rubbish was continued throughout the fiscal year July 1, 1935, to June 30, 1936, according to the annual report of the Board of Public Works. At present about 60 per cent of the fleet consists of the smaller trucks. Continued reduction in the unit cost of refuse collection is indicated in the man-hours of labor required per unit of refuse collected, and by the fact that 5 per cent less personnel was required, although the quantities collected increased by 6.7 per cent for garbage and 14.3 per cent for non-combustible rubbish.

Income from the Refuse of Jacksonville, Fla.

THE city of Jacksonville, Fla., will receive $24,300 during the next three years from the Harvester Corporation of Jacksonville, which has agreed to pay this sum for the right to salvage from material hauled to the municipal incinerators during the three-year period.

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MAXIMUM PROTECTION

Burroughs Tax Receipting Machine prints on the receipt—in distinctive figures—the serial number, tax bill or property description number, date, amount of payment, and cashier identification. A transcript of each receipt is printed on a locked-in, detail tape; and a total accumulated against which cash must balance at the end of the day. This affords maximum protection to clerk, tax collector and city.

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Burroughs Tax Receipting Machine speeds up the work, permitting the clerk to wait on more customers, thus serving taxpayers better. It can also be used as a fast, practical adding machine for all kinds of figure work incidental to tax accounting. The many uses to which Burroughs Tax Receipting Machine can be put make it practically indispensable to any municipal tax billing and tax collecting department.

The low price of Burroughs Tax Receipting Machine—the speed, ease and accuracy it provides in handling the work—the many extra figuring jobs on which it can be profitably employed—all can be quickly and thoroughly demonstrated. For complete details about this machine or other Burroughs equipment, telephone the local Burroughs office. Or check and mail the coupon.

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Public Works and Streets

A P.W.G.S. Suggested by Ickes in Radio Talk

A P.W.G.S. is a new combination in the political alphabet, but it is one of which we should know more and which should become a permanent institution. In a talk on the National Radio Forum in December, on the future of public works, Harold L. Ickes, Public Works Administrator, outlined a planning scheme for the future to be maintained in skeleton form at Washington to prepare plans for public works which might be constructed during another great depression. This skeleton unit would be known as the Public Works General Staff. Mr. Ickes said:

"Even if the necessity for a continuation of building on the present scale no longer exists, we must think of the future. There is no assurance, based upon the past, that we will not find ourselves in another depression in the years to come. We hope that this will not be the case, but probably there exists in the hearts of all of us a lurking fear that, after all, this hope is just a hope. If there should be another depression, we must not be unprepared, as we were when the last one struck us. As an irreducible minimum, we should maintain a public works general staff. We should have a reservoir of well-considered, carefully planned projects, work on which could be undertaken as soon as the necessity arose and money was made available for them."

Maintenance in Los Angeles

OWING to lack of funds, street maintenance activities in Los Angeles, Calif., were considerably curtailed during the last six months of 1935, but for the second half of the fiscal year, the first six months of 1936, additional money was made available so that the total volume of work performed for the entire fiscal year was substantially greater than for the previous fiscal year. The square feet of paved streets repaired increased nearly one-third, or from 2¾ million to over 3½ million square feet. The area of oiled streets resurfaced also increased by more than 1½ million square feet, while the curb-miles of streets cleaned more than doubled. Nearly 52,000 street name signs were installed or replaced, as compared with 35,762 for the previous year. A total of 100,000 vacant lots were checked by the lot-cleaning section, 90,381 lots were posted with the required legal posters, 20,526 lots were cleaned by city forces, and the cost of cleaning each one was sent to the county tax collector for inclusion in the individual tax bills.

Street maintenance, cleaning and repair in the city of Los Angeles depends very largely on gasoline tax and motor-vehicle license allocations from the county of Los Angeles. No agreement exists between the city and the county as to what proportion of these funds which the county receives is to be allocated for street work within the city. This makes it impossible to set up in advance a definite program of street cleaning and repair. Tentative programs are outlined at the beginning of each fiscal year, but they can be completed only if sufficient money is made available for that purpose by the county.

River Flowing Backwards Won't Stay Put; Control

CHANGING the direction of flow of the Chicago River 50 years ago was a large task, but keeping it that way in the future, when diversion of Lake Michigan water to the river that flows upstream is reduced, calls for another large construction project which forehanded Chicago engineers are pushing to completion now. About twelve times a year, following heavy rains or snowfalls, the river forgets and runs back the way it used to. For a few hectic hours, engineers increase the flow from Lake Michigan by opening the dam at Lockport some 40 miles upstream, and usually succeed in holding the heavily polluted stream to its man-made course.

The periodic sprees constitute a serious menace to the city's water supply and to its beaches. In the past, engineers at the dam have been successful in holding the river in check, but their task has been complicated by the decision of the United States Supreme Court which has made necessary the $58,630,000 system of sewers and sewage-treatment plants now being built in Chicago with PWA funds.

The charge of nearby states in the Great Lakes region that Illinois was lowering lake levels by diverting a too great quantity of water for the dilution of its sewage resulted in a court order reducing diversion from about 10,000 cubic feet per second to a maximum of 1,500 cubic feet per second by January 1, 1939. The reduction is to be gradual; the diversion now is less than 5,000 cfs.

Control of the river at present constitutes no great problem, because the heavy diversion of lake water hastens its flow upstream. Engineers predict, however, that with reduction of the volume for dilution purposes, it will be increasingly difficult to restrain the tendency of the river to flow downstream again. Construction is now under way on control works across the river. This construction program calls for the sealing of Chicago Harbor to prevent river water from reaching the lake, and the building of a dam blocking the river at its mouth. To permit the passage of shipping when the dam is closed, a huge navigation lock will be built.

Although the purpose of the project is primarily to protect the city's water supply and to assure a continued upstream flow of the river to carry sewage effluent into the Mississippi River, Chicago will acquire valuable harbor improvements as a by-product.

When the program is completed, the city will have an entirely enclosed harbor permitting interchange of cargo between lake freighters and the barges plying the Lakes-to-Gulf waterway. The new navigation lock will be 80 feet wide and 600 feet long, large enough to accommodate the biggest vessel on the Great Lakes.

City of Moles Plans New Underwater Tunnel

NEW YORK CITY is not infrequently referred to as the "City of Moles" because it is possible to travel so far underground with only infrequent excursions into daylight. It is true that transportation has been greatly facilitated in New York City by its great subway system and the subaqueous tunnels connecting the borough of Manhattan with New Jersey and Brooklyn. On the last week day of February, Mayor LaGuardia announced the completion of plans for a twin-tube vehicular tunnel between the lower tip of Manhattan and Brooklyn. It is estimated by the engineers of the New York City Tunnel Authority that the cost of the project would be about $70,850,000. The engineers' report indicates that the tunnel would be self-supporting by tolls up to a cost of approximately $40,000,000. The Authority will try to get a grant of the balance from the Federal Government.

Rubber Paving Blocks Bounce Up Again

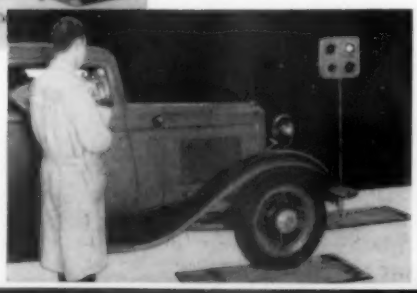
ACCORDING to a report received by the Bureau of Foreign and Domestic Commerce from Stockholm, a Swedish manufacturer has started manufacturing rubber paving blocks to be used as a street surface. This material is now being tested on a bridge in Stockholm, and if the blocks prove satisfactory it is believed that the Stockholm Street Administration will use rubber blocks for surfacing a number of streets and bridges where other surfaces have not worked out well.

The bridge where the tests are being made has had a wood surface which has not been satisfactory, especially in winter. Tests have also been made with asphalt surfaces, but neither the wood nor the asphalt has lasted more than two years on the bridge. It is expected that the rubber paving blocks will last about five years. For protection against slipping or skidding, the blocks are grooved at a 45-degree angle to the direction of traffic.

Paving programs pay dividends in planned replacement of streets worn beyond economical maintenance.

Traffic Safety *starts with* CHASSIS SAFETY

LEFT: *Tests each brake separately by full wheel revolution under electric power . . . shows total stopping ability . . . shows up "out-of-round" drums. TESTS TRACTOR AND TRAILER TRAINS accurately.*



RIGHT: *Testing wheel alignment and toe-in, precisely and quickly. Shows exactly what work needs to be done. Nothing left to guesswork or estimate with Bendix test equipment.*

ONLY jail can be depended on to cure the criminally careless driver—and often even that fails. But *every* student of street safety will admit that well enforced regular chassis inspection materially cuts down the crashes and maimings.

Building more car-stopping equipment than any other organization in the world, Bendix knows what it takes to maintain any chassis in safe condition . . . and Bendix builds what it takes.

Most *car manufacturers* use Bendix testing and inspection equipment. It's in use in scores of such cities as Cincinnati, Omaha, Portland, Miami, Seattle, Billings, Knoxville—in either municipal or commercial service. Bendix has a staff of men and a variety of *proved* plans for making public Safety Lines practical and effective.

Bendix Civic Safety Clinic Equipment enables a few men to test *a car a minute* on each Safety Line—and to do it *thoroughly and accurately*. It tests brakes, steering, headlights, wheel alignment and as much in addition as you care to check. Fill out and mail the coupon TODAY!

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Public Safety

Six Fast Hose Trucks of New York City

THE latest 6 of the 131 hose and turret trucks now belonging to the New York Fire Department were delivered by the Walter Motor Truck Co. early in 1936. In the tests, they made a 2,000-foot hill of average 9.8 per cent grade in 50 seconds, where 2 minutes was the allowance. On another hill where the time limit was 50 seconds, they were up with 14 seconds to spare.

Powered with 150-hp six-cylinder special fire-apparatus motors, these trucks can maintain 45 miles per hour, and they hit 52 mph in the test run of 20 miles through New York City in 50 minutes.

The automatic locked differential, which prevents any wheel with less traction than the others from slipping, insures that the apparatus will get to the fire regardless of the ground, whether snow, sleet or mud. The drive system follows the same principle and construction as the aerial units furnished the Department by this builder in 1934-35. The extended engine in front of the front axle tends to equalize the weight of the four wheels, thus increasing tire life and providing better tractive ability.

The drop-frame of the chassis is straight behind the operator's seat, resulting in a very low mount of the hose body, a lower center of gravity, greater stability, and smoother riding. The Pompier ladders, developed by the New York Fire Department, are mounted on the side of the truck instead of on top as formerly, so that they do not interfere with the men riding on the back step or with the handling of the 1,500 to 1,800 feet of 2½- and 3-inch hose in the hose body. Large compartments provide for storing the equipment. The turret pipe, fed from the pumping engine, is arranged with a platform for the convenience of the operator.

These trucks are equipped with a forward windshield for the protection of the driver. The next step is to be cab and rear windshield as has already been done on the new pumpers, to the improvement of appearance as well as utility.

Gas Masks in Duluth

THIS department has used the Burrell all-service gas masks in the pumping stations where it is necessary to handle chlorine and in our Distribution-Maintenance Division by crews in the carrying out of the work. One of these new masks recently purchased will be used in an emergency truck which the Department is developing, and the other will be used in the Gas Appliance Division.

FELIX SELIGMAN,
Manager, Water and Light Department,
Duluth, Minn.

Fire-Alarm Policy and Figures in New York City

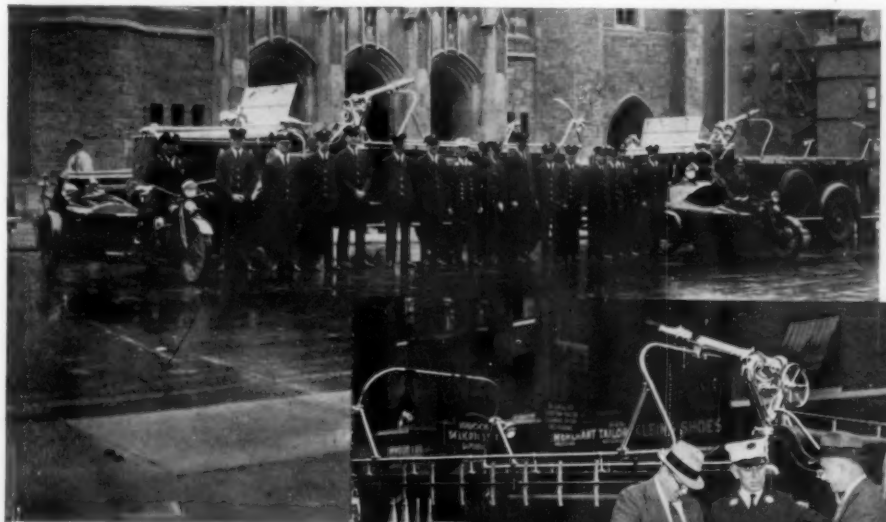
THIS Department is constantly endeavoring to extend and improve its fire-alarm-telegraph system, as the fire-alarm box is still considered the most rapid and dependable means of reporting fires. Although the telephone is used extensively and is of invaluable aid to the Department, especially in outlying sections where fire-alarm boxes are not closely spaced, we most strongly urge the use of the fire-alarm box for transmitting an alarm of fire. The fire-alarm box is more dependable, less liable to cause mistakes, and insures a more rapid and adequate response of fire companies. Below are total statistics of New York City's system:

	Dec. 31, 1935.	Dec. 31, 1936.
Fire-Alarm Boxes		
Street boxes	9,712	9,817
Public schools	819	818
Alarms transmitted	51,413	48,180
False alarms	11,077	8,560
Circuit Mileage		
Underground	8,114	8,161
Aerial cable	443	416
Aerial wire	1,693	1,750
Conductor mileage	21,716	21,786

VAL. FENDRICH,
Chief, Bureau of Fire Alarm Telegraph,
New York City.

When a City Needs Power

"PORTABLE electric generators proved invaluable during the flood emergency when all current was cut off for a few days," says Fire Chief Hughes of Louisville.



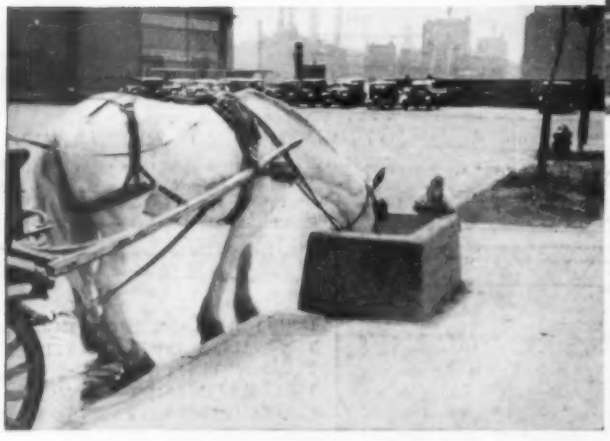
(LEFT) BACK OF THE MEN ARE THE WALTER HOSE AND TURRET TRUCKS; FLANKING THEM ARE TWO INDIAN SIDE-CAR MOTORCYCLES USED TO CLEAR THE WAY FOR THE TEST RUN THROUGH NEW YORK CITY

(RIGHT) CAPTAIN HERMAN S. KUCH, IN CHARGE OF THE NEW YORK FIRE DEPARTMENT REPAIR SHOP

PALATABLE DRINKING WATER

. . . IN CITY

IN COUNTRY . . .



The DEMAND *is for the* BEST

- HISTORY TELLS US that in 1453 the Turks conquered Constantinople which ended the trading between Europe and the East. It thus became difficult to secure the spices which were so necessary to disguise or mask the objectionable flavors then present in food.
- Endeavoring to still obtain these desirable spices, efforts were made to reach the East by other routes, which officially resulted in the voyages of Columbus who died believing that he had discovered a new way to the East.
- Thus man's craving for desirable flavors was a most important influence in the discovery of AMERICA.

. . . IN TROUGH

The elevation of living standards so pronounced during the present century has brought about a corresponding elevation of quality standards in products destined for human consumption.

Today ACTIVATED CARBON plays a very important part in the removal of objectionable colors, odors, and flavors from many of the food products entering our homes.

It is no wonder, then, that the public today demands that the water entering into the home should be as palatable as the foods, etc. Here, too, activated carbon has played an important role these past seven years in helping the Operators of Filtration Plants to furnish a water from which objectionable tastes and odors have been removed. However, many plants have used activated carbon only when severe tastes and odors are present.

A recent survey indicated the annual per capita cost of furnishing palatable drinking water through the use of AQUA NUCHAR was less than 3c. May we suggest, therefore, your consideration to applying a small dose every day in the year in order that your Plant may be properly seeded and through this means furnish a palatable drinking water that will enhance the relationship between the water department and the consuming public.

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Health and Sanitation

What Is Epidemiology?

TO most people epidemiology is a meaningless word, but to health workers it signifies in simple terms the science of epidemics, or the behavior of a disease among a population in reference to time and place. While the practicing physician is concerned solely with the individual patient whose disease he diagnoses and treats, the epidemiologist studies the whole community as his patient both sick and well. His problem, according to Dr. S. L. Wadley, Epidemiologist, City Health Department, Memphis, Tenn., is to find out what conditions cause some people to be attacked by a disease and others to go unharmed.

It is necessary to determine this fact for each communicable disease before that disease can be fought successfully. In some diseases, like smallpox, the epidemiologist knows the complete answer; that is, the well do not have smallpox because they are successfully vaccinated against it, and the successful control of smallpox consists of keeping the public at all times completely vaccinated against it. In other diseases, like infantile paralysis, the epidemiologist does not know as yet why some people escape and that disease becomes epidemic, but for want of a better term he says these people are immune. The trouble in the control of infantile paralysis is the inability of any known test to tell the immune persons from those that are susceptible, as well as the absence of any vaccine or drug now known that will prevent the susceptible ones from taking the disease.

Therefore, the epidemiologist in the investigation of infantile paralysis keeps charts of ages, color, sex, prevalence, contacts, etc., of infantile paralysis cases, and with the cooperation of research workers in hospitals and laboratories gathers data that will eventually hold the key to why people contract infantile paralysis. When this condition becomes known, and only then, can infantile paralysis be successfully fought.

But, aside from the rare diseases that come only at intervals and then attack only a small percentage of the population, there are a host of diseases like typhoid fever, diphtheria, diarrhea, etc., to which almost everybody is susceptible at some time or other. The control methods of these diseases are well known, but in order to work successfully the epidemiologist is constantly kept busy finding sources of infection and blocking channels through which they may spread.

Every case of communicable disease is an epidemiological problem, but some are of more importance than others. For instance, it is more important to trace the source of a case of typhoid fever than one of measles, because in the case of typhoid fever, if the infected person is a food handler, it is possible for him to infect many persons with a highly fatal disease at a single banquet, and these affected persons in turn set up many different foci of infections. In the case of measles, only a small age-group of people are susceptible, and epidemiologists and doctors admit their inadequacy of successfully controlling it because as yet no satisfactory vaccine has been produced to prevent measles.

The epidemiological division of a city health department may be said to be the eyes of the health department, in that it seeks to find the location of communicable diseases and the manner in which these diseases are being spread, in order that the other divisions of the health department may know how to attack.

Health Department Regulates Wells

OF interest to health officers and other municipal officials is the recently adopted regulation in the New Haven Department of Health dated August 15, 1936, which forbids the digging, driving or drilling of any well within the city of New Haven until information regarding the proposed well is registered with the Department of Health. This information must also include the proposed location of the well, the type of construction, and the uses to which the water is to be put. After the well is completed, a final report on the depth and size of the well, pumping facilities, and other pertinent information must also be furnished within ten days. The well may not be used for any purpose other than that cited in the registration. Violation of these regulations carries a fine of not more than $50.

The adoption of this regulation accomplishes three desirable objects:

1. It permits the local Health Department to investigate the location and construction of proposed wells, and if it appears that the well is to be poorly located or constructed, the property owner can be properly advised. The location of wells in thickly populated areas where the ground receives drainage from near-by sewers is a serious potential health hazard if the water from such wells may be used for drinking or other domestic purpose.

2. In case of any outbreaks of sickness where there is a possibility of a water supply's being responsible, the registration of private supplies is of aid in tracing down possible sources of trouble.

3. Many serious water-borne epidemics in this country have been caused by piping connections between safe potable water supplies and unsafe water supplies. The management of each public water system, as well as the health officials, must be constantly on the alert for such connections. Even where it is not proposed to use well supplies for drinking or domestic purposes but rather to provide them for industrial or other use, there is always the danger of a cross-connection being made at some time. Registration of new private wells is of great aid in keeping track of possible hazards from cross-connections.

Fort Wayne Starts Fight on Social Diseases

THE Board of Health estimates that 1,000 persons in Fort Wayne, Ind., are innocently infected by social diseases annually. This city has been particularly free from reportable contagious diseases, especially diphtheria. With the ordinary contagious diseases well under control, the Board of Health has launched a campaign against the two most common venereal diseases, namely syphilis and gonorrhea. This is part of a national movement to aggressively attempt to control these diseases.

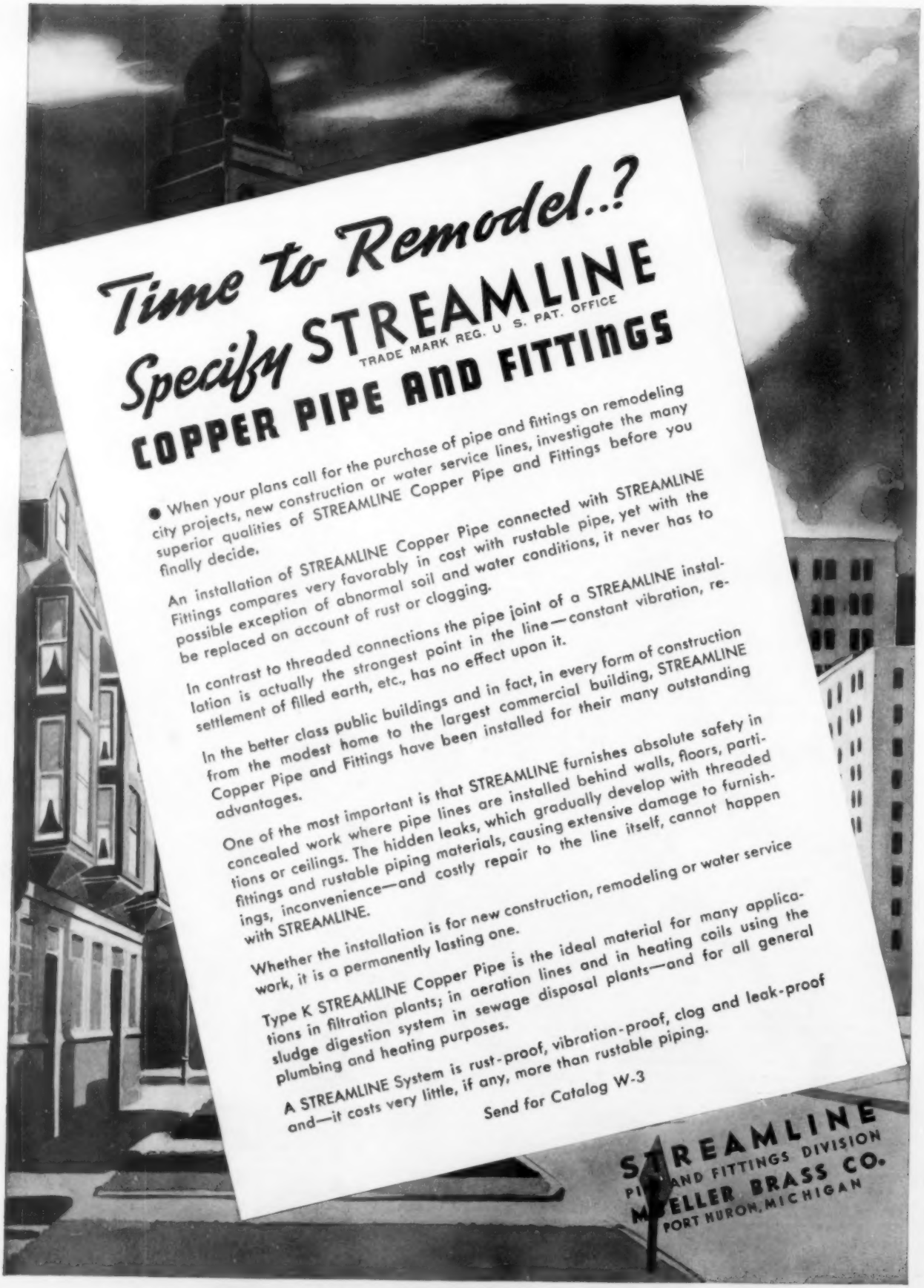
In its statement the Fort Wayne Board of Health says:

"This problem is the most difficult problem in public health work for two reasons: first, the mention of these diseases has been suppressed until recently and publicity has not been consistent nor sufficient; second, venereal diseases are not reported, consequently the Health Department has no way of supervising their spread. Most people are of the opinion that these diseases are contracted only through sin, and that decent individuals owe no consideration to those afflicted with them. This is far from the fact. Certainly a new-born baby, blinded from gonorrhea, is not at fault and neither is a syphilitic child. The bride who develops either of these diseases from her husband does so through no fault of her own. This same is true, of course, of the husband. Undoubtedly, very many people are innocently infected and, because of ignorance, do not even know the nature of these diseases. Although we have no way of knowing, it is safe to estimate that at least one thousand men, women and children are infected with these diseases in Fort Wayne through no fault of their own. We feel that not only this thousand should be cured, but also all the others, so that further innocent people will not be contaminated.

"The campaign program will consist largely of education by means of the press, radio and public meetings. Everyone should know about these diseases. Parents with growing children should be able to give them the proper advice. Employers and employees should familiarize themselves with the nature of these diseases. Young people who anticipate marriage should in particular be well informed about the seriousness and complications of both gonorrhea and syphilis. Expectant mothers should be particularly apprehensive, because syphilis is inherited. Plans are under way to form a league similar to the Anti-Tuberculosis League. Mayor Baals has had such a plan in mind for some time, and it is stated that he will appoint a committee to develop such an organization.

"We are safe in saying that up to now no one has ever wanted syphilis and very few have ever wanted gonorrhea. Some people enjoy bragging about their operations but no one boasts about either of these two diseases. At the Venereal Clinic we are well equipped to treat those cases who are unable to pay. During the past year we have treated nearly 400 cases of gonorrhea and syphilis. Nearly 1,000 treatments per month have been given, all to people who cannot afford to pay the regular medical fee for such treatment.

"The members of the Medical Society have joined this ambitious program and we hope that everyone who reads this will join the Anti-Venereal Disease League. One might be hesitant about aiding a crusade of this kind now, but twenty years from now undoubtedly it will be as powerful an organization as the Anti-Tuberculosis League.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APRIL, 1937

Vol. LII, No. 4

The American City

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Harrisburg's Repaving Program

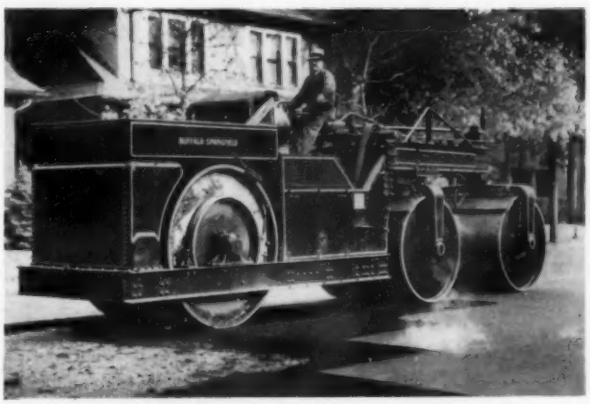
Methods Employed in Salvaging Old Bases and Removal of Car Tracks

By WILLIAM J. FICKES
Director, Department of Streets and Public Improvements,
Harrisburg, Pa.

EVERY city of size or consequence in the country has at one time or another been called upon to meet the repaving and reconditioning problem occasioned by the abandonment of street trolley-car services and the substitution of bus or other methods of public transport.

In these days of public clamor for reduction of the public budgets and the paring-down of maintenance expenditures for public works, it requires the greatest detailed study on the part of public officials to determine the proper methods to employ in the repaving of railed streets, lest false economy creep in and pay the usual dividends of public complaint, high maintenance and general dissatisfaction.

Realizing the importance of establishing a policy for the future, the City Highway Department carefully selected North Second Street in Harrisburg between Reilly and Division Streets for its initial experiment, a 36-foot wide thoroughfare comprising 50,000 square yards of work.

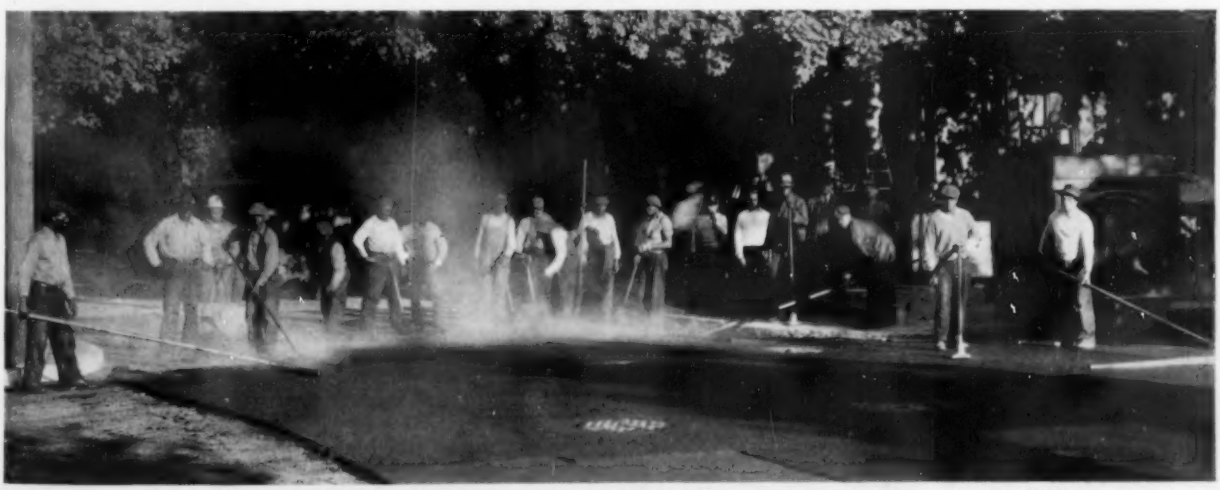


THE BIG 18-TON 3-AXLE ROLLER THAT DID THE CROSS ROLLING AND FINAL LONGITUDINAL ROLLING ON THE NORTH SECOND STREET REPAVING IN HARRISBURG

Restoring the Base

The old sheet asphalt wearing surface was removed by means of air pneumatic tools. In sections of the car-track area when the concrete base was found to be in good, sound condition, the railheads were burned off by means of acetylene torches flush to the base. The old base was thoroughly examined and tested for weakness, and all unsatisfactory portions where found were removed.

The grade was raised at



RAKING AND LUTING THE SURFACE COURSE OF TRINIDAD SHEET ASPHALT ON NORTH SECOND STREET, HARRISBURG, PENNSYLVANIA

CAREFUL PLACING, EXPERT ROLLING AND CONSTANT CHECKING WITH A 10-FOOT STRAIGHT-EDGE MADE THE COMPLETED PAVEMENT AS SMOOTH AS POSSIBLE

the center line of the street by 4 inches. New concrete of 1:2:4 mixture was then spread over the entire rail area, and feathered out to meet the quarter line of the existing base.

Paving

A sheet asphalt binder course of the "close" type was then spread on the newly prepared base, the thickness varying between 1½ and 3 inches, thus bringing the pavement surface up to a perfect line and cross-section. Where it was necessary to lay the binder course at the greater depth for any appreciable area, it was applied in two courses to get the maximum of compression and stability. The greatest care was exercised by the engineers in laying the binder course, straightedging every foot of the area to remove any depressions over ¼-inch as gaged by a 12-foot straight edge. A 1½-inch wearing surface of Trinidad sheet asphalt was then laid on the prepared binder course.

The initial compression was supplied by a 10-ton tandem roller, the final compression and cross rolling being done by a Buffalo-Springfield 18-ton, 3-axle tandem roller.

The freshly spread wearing surface mixture was dragged lightly by metal-edged lutes to remove any traces of rake marks before the initial compression. Immediately after the initial compression, the area rolled was tested again by straightedges for shallow depressions, and adjustments were made by the addition of fresh material.

Composition

Typical examples of the mesh composition and bitumen content of the sheet asphalt binder and wearing surface as revealed by field sampling are as follows:

BINDER

Mesh No.	Passing Per Cent of Trinidad Asphalt Cement of 60-50 Pen.
Bit.	4.62
200	3.10
80	5.86
40	10.68
10	5.64
¼"	42.20
½"	27.90
	100.00

WEARING SURFACE

Mesh No.	Passing Per Cent of Trinidad Asphalt Cement of 50-60 Pen.
Bit.	10.1
200	14.9
80	18.3
40	34.2
10	21.5
Ret. 10	1.0
Total	100.0

Conclusions

The experience gained in this operation proves conclusively that sound economy can be practiced safely by utilizing the investment made in old bases and by the strengthening of the heaviest-traveled areas of the street.

The cost of the methods herein described as compared with the cost of entirely new construction definitely indicates a large saving in the estimated charge per square yard per year of life in its favor.

Tax Limitation Places the Cart Before the Horse

FROM an effective presentation of the case against overall property tax limitation, in a February, 1937, pamphlet by Charles J. Fox, City Auditor of Boston, Mass., the following conclusion is quoted:

"No right-thinking person will deny the desirability of affording real estate relief from the heavy tax burden it has been carrying in recent years. Officials charged with the responsibility of uninterrupted maintenance of governmental service and with the protection of governmental credit can not approve of the tax limitation method for relieving real estate, because they know that tax limitation of and by itself will not accomplish the claims of the proponents of the plan.

"Tax limitation places the cart before the horse. Municipal tax rates are developed from three factors or elements—Appropriations, Revenues, and Assessed Valuations. In the actual determination of the rate, Revenues are subtracted from Appropriations, and the remainder is divided by the Assessed Valuation, the resulting quotient being the Tax Rate. Instead of recommending a program to regulate or control the elements, tax limitationists advocate placing a straitjacket on the tax rate. The intelligent approach to the present problem is clearly through measures to control expenditures, to effect a comprehensive broadening of the revenue or tax base, and to establish a scientific plan of assessment procedure.

"The experience of municipalities in the states where this plan has been adopted clearly indicates that the adoption of tax limitations is bound to precipitate so serious a financial crisis that all governmental activity will be seriously and perhaps permanently injured. Orderly functioning of local governments is not only desirable but absolutely necessary for the continuance of a democratic form of government in this country. The adoption of any plan which will jeopardize such functioning must be combated by all those people who believe in American institutions."

Detroit's Accounting System for Water-Works Customers

A Method Designed to Serve a Department Which Has the Right of Lien for Collecting Charges

By HAL F. SMITH
Department of Water Supply, Detroit, Mich.

THERE is nothing spectacular about the customer accounting system of the Detroit Department of Water Supply. If it deserves a place in the sun, that is due solely to the fact that it does the job it was designed to do, accurately, thoroughly and economically.

The Detroit Department of Water Supply is a municipal department, operating by authority of the city charter, which bestows upon it the right of lien as security for its charges for water service, a fact which influenced to a considerable extent the design of its customer accounting plan. This Department now has 274,000 customers' accounts, which are practically 100 per cent metered.

Application for service is made by a licensed plumber, acting as agent for the owner. Upon application and receipt of the service installation fee, the Department makes the tap and extends the service to the lot line and installs a control box. The plumber does all the work inside the lot line, under the supervision of this Department, the Board of Health and the Department of Buildings and Safety Engineering.

Opening the Account

The customer's account is opened at the time the service tap is made. A meter reading sheet is prepared, using the tap date as the beginning date for the service charge. The meter reader inspects the property while covering his route, and reports conditions. The plumber is expected to notify the Department as soon as he is ready for the meter installation, but if he fails to do so, the meter reader discovers it and so reports. The meter is then installed and a meter installation report forwarded to the Meter Reading Bureau, where it is entered on the reading sheet and sent to the Addressograph section, where an Addressograph plate is made. Before filing the plate, it is used to head up the customer's ledger card. The ledger card is then held in file until the first reading of the meter is obtained.

The account is then ready for preparation of the initial bill, which is computed as follows: the account is charged at construction service charge rate from the date of the tap to the date of the meter installation, and at the metered rate from the date of the meter installation to the date of reading, in the amount indicated by the meter. The construction service charge is a flat rate based on the size of the service line and is intended to cover the charge for service rendered during the construction of the building. The construction service charge rate is applied to all services of 1½ inches and under. The charge applied to larger lines to cover the cost for service from the date of the tap to the date of the meter installation is known as a building tax and is based on the size and kind of building erected and in accordance with an adopted schedule.

This method of opening an account makes certain that an account is opened for every tap, and quite satisfactorily provides a method of billing for service rendered prior to meter installation.

Meter Reading and Billing

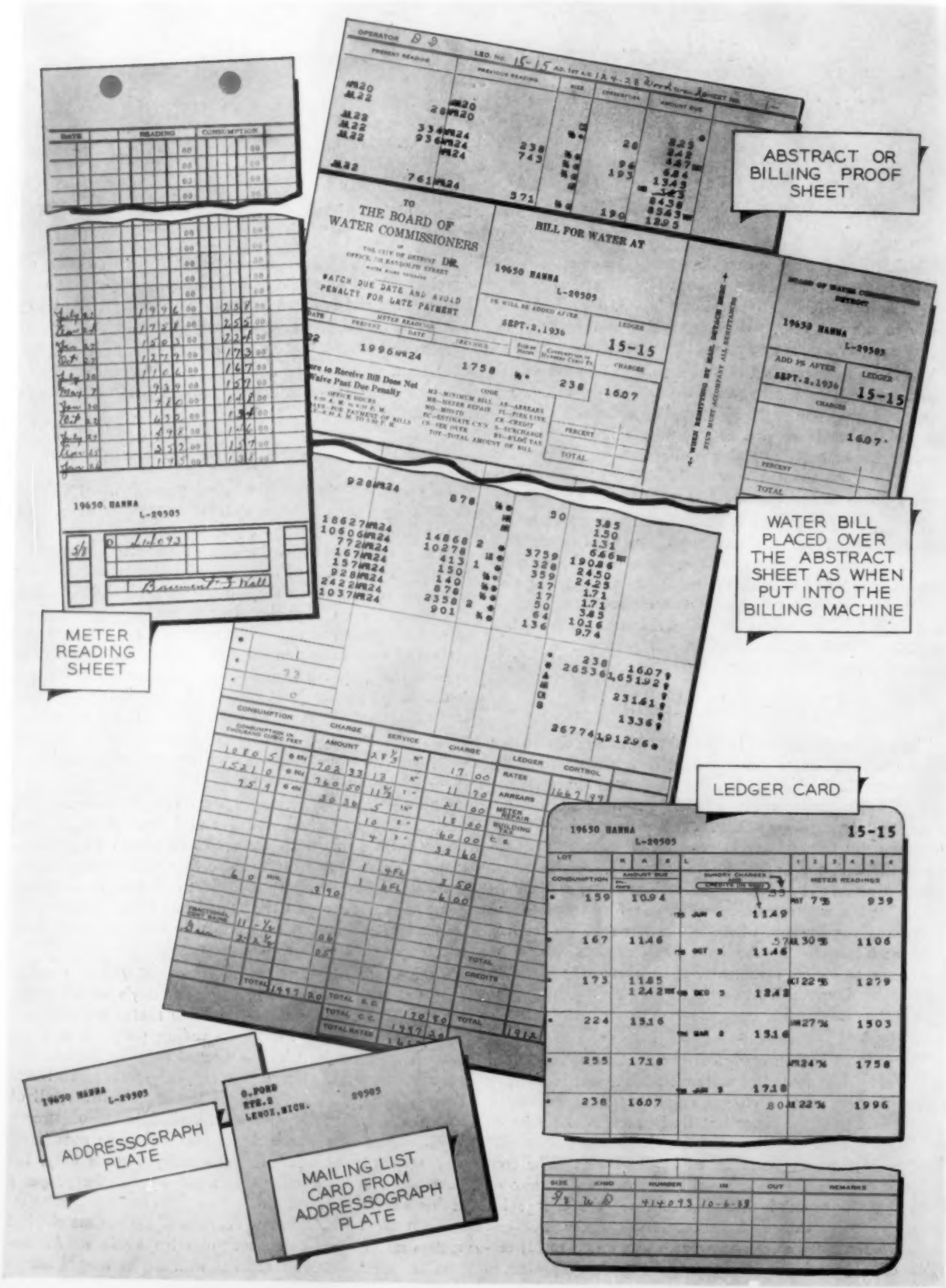
All customers' accounts are billed quarterly, except those covered by 4-inch meters and larger, which are billed monthly. For the purpose of reading and billing the quarterly accounts, which are over 99 per cent of the total, the city is divided into 36 districts, which allows a little less than two days for the reading of each district. We are operating on a cycle plan, in which our schedule provides a period of approximately two days for the completion of each operation for each district, such as reading meters, checking readings obtained and entering skipped readings, preparing bills, proving computations, delivering bills, and the various operations of the collection routine. Under this plan, all operations are in progress every day, thus assuring an even flow of work and eliminating peak loads at any point.

The customer accounting system used by this Department is the combination bill and ledger plan. Public utility billing machines are used and are so designed as to print the bill and at the same time make a carbon impression of the bill on a proof sheet and then, by a repeat-print operation, to post the same items to the ledger card, thus assuring that the items posted to the bill, proof sheet and ledger card are identical.

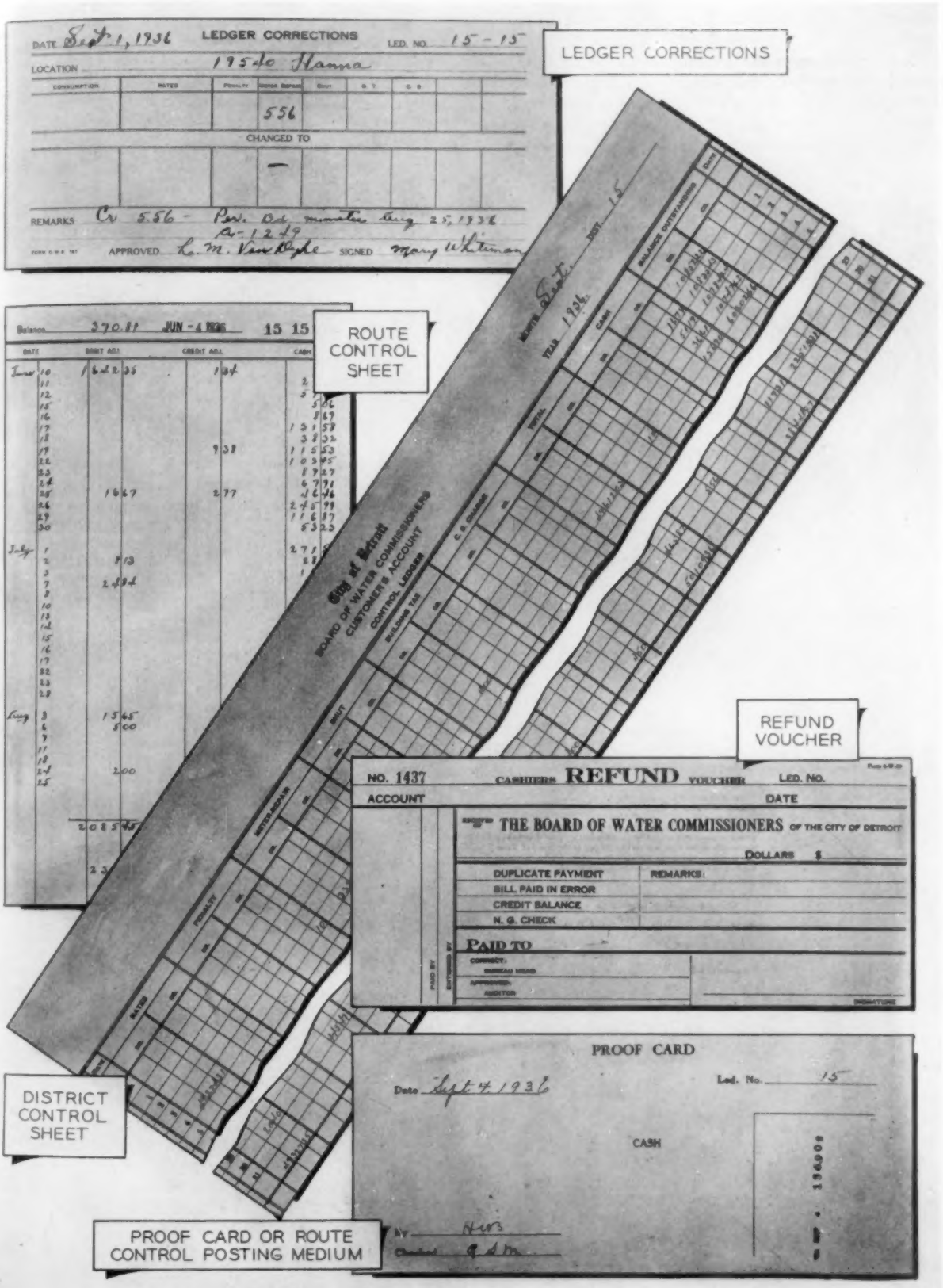
Each of the 36 districts is divided into meter reading routes of such size as to constitute one day's work for one reader. The reading sheets for these routes are arranged in order best suited for meter-reading purposes and are locked into a binder which is opened only for the addition of new accounts. Corresponding ledger cards and Addressograph plates are arranged in the same order, all of which are covered by an alphabetical index of streets, which shows at a glance the district and route number of any account. Accounts are known by address only, for the reason that the charge is made against the property rather than any individual.

Each meter-reading route consists of approximately 170 meters and is used as the unit of all operations. All operations are made in accordance with a prearranged sched-

Forms Used for the Control of Accounts by


ABSTRACT OR BILLING PROOF SHEET
WATER BILL PLACED OVER THE ABSTRACT SHEET AS WHEN PUT INTO THE BILLING MACHINE
METER READING SHEET
LEDGER CARD
ADDRESSOGRAPH PLATE
MAILING LIST CARD FROM ADDRESSOGRAPH PLATE

the Department of Water Supply of Detroit


LEDGER CORRECTIONS
DATE Sept. 1, 1936 LEDGER CORRECTIONS LED. NO. 15-15
LOCATION 1956 Hanna
CHANGED TO
REMARKS Cr 5.56 - Pen. Ord. minutes Aug 25, 1936 A-1249
APPROVED L. M. VanDyke SIGNED Mary Whitman
ROUTE CONTROL SHEET
Balance 370.11 JUN - 4 1936 15 15
REFUND VOUCHER
NO. 1437 CASHIERS REFUND VOUCHER LED. NO.
ACCOUNT DATE
THE BOARD OF WATER COMMISSIONERS OF THE CITY OF DETROIT
DOLLARS $
DUPLICATE PAYMENT
BILL PAID IN ERROR
CREDIT BALANCE
N. G. CHECK
REMARKS:
PAID TO
DISTRICT CONTROL SHEET
PROOF CARD
Date Sept 4, 1936 Led. No. 15
CASH
PROOF CARD OR ROUTE CONTROL POSTING MEDIUM

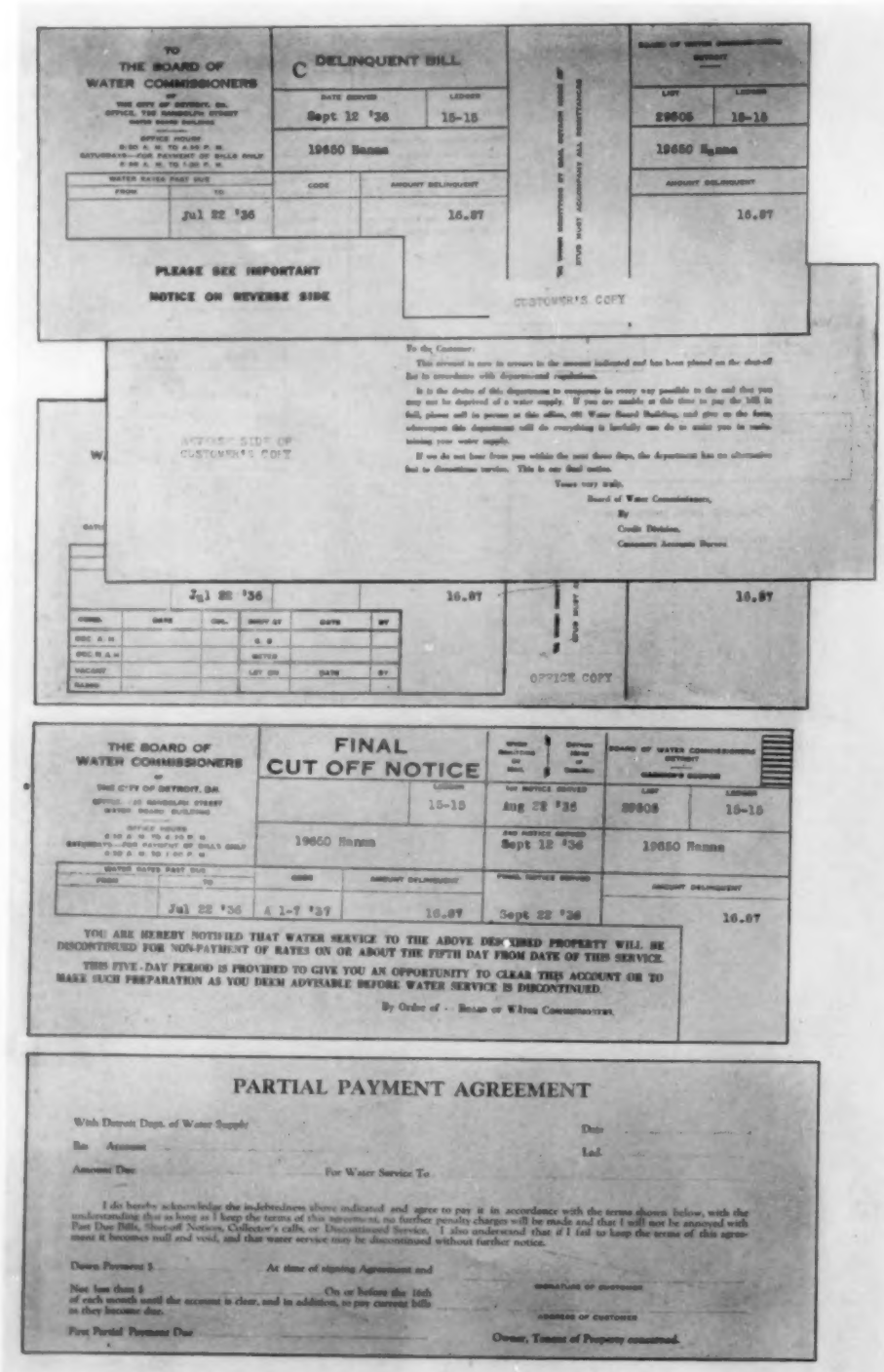
ule. A brief statement of the principal operations of the plan given in chronological order will clarify the picture.

Readers report to the office each morning and are assigned a reading book. Readings are obtained during the day, and the completed book is turned in the following morning.

Clerks go through the reading books looking for abnormal consumptions and skipped readings, and at the same time verify the reader's computation of consumptions. These clerks also write up "pick-up" slips for re-reads, investigation of abnormal consumptions and skipped readings.

The "pick-up" slips made out in the previous operation are turned over to the pick-up men. These pick-up jobs are completed during the day and turned in the following morning. The pick-up readings are entered on the reading sheet, and where no readings were obtained, the consumption is estimated. Reading books are held, if necessary, for a third attempt to get the reading. Completed books are then sent to the billing section.

Bills are addressed by Addressograph machines and sent to the billing section. Ledger cards for districts to be


TO
THE BOARD OF
WATER COMMISSIONERS
C DELINQUENT BILL
Sept 12 '36
15-15
19650 Hanna
29605
15-15
19650 Hanna
Jul 22 '36
16.87
16.87
PLEASE SEE IMPORTANT
NOTICE ON REVERSE SIDE
CUSTOMER'S COPY
REVERSE SIDE OF
CUSTOMER'S COPY
Jul 22 '36
16.87
16.87
OFFICE COPY
THE BOARD OF
WATER COMMISSIONERS
FINAL
CUT OFF NOTICE
15-15
Aug 28 '36
29605
15-15
19650 Hanna
Sept 12 '36
19650 Hanna
Jul 22 '36
A 1-7 '37
16.87
Sept 22 '36
16.87
YOU ARE HEREBY NOTIFIED THAT WATER SERVICE TO THE ABOVE DESCRIBED PROPERTY WILL BE DISCONTINUED FOR NON-PAYMENT OF RATES ON OR ABOUT THE FIFTH DAY FROM DATE OF THIS SERVICE.
THIS FIVE-DAY PERIOD IS PROVIDED TO GIVE YOU AN OPPORTUNITY TO CLEAR THIS ACCOUNT OR TO MAKE SUCH PREPARATION AS YOU DEEM ADVISABLE BEFORE WATER SERVICE IS DISCONTINUED.
PARTIAL PAYMENT AGREEMENT
With Detroit Dept. of Water Supply
Date
Re Account
Ledger
Amount Due
For Water Service To
I do hereby acknowledge the indebtedness above indicated and agree to pay it in accordance with the terms shown below, with the understanding that as long as I keep the terms of this agreement, no further penalty charges will be made and that I will not be annoyed with Past Due Bills, Shut-off Notices, Collector's calls, or Discontinued Service. I also understand that if I fail to keep the terms of this agreement it becomes null and void, and that water service may be discontinued without further notice.
Down Payment $
At time of signing Agreement and
Not less than $
On or before the 15th of each month until the account is clear, and in addition, to pay current bills as they become due.
First Partial Payment Due
SIGNATURE OF CUSTOMER
ADDRESS OF CUSTOMER
Owner, Tenant of Property concerned.

SPECIAL FORMS USED BY THE COLLECTION SECTION OF THE CUSTOMER ACCOUNTING DIVISION, DETROIT DEPARTMENT OF WATER SUPPLY

billed are sent to the billing section. To each billing machine operator is assigned a reading book with the corresponding ledger cards and pre-addressed bill forms. Bills are prepared as previously described.

Completed bills, together with abstract sheets and ledger cards, are sent to the Internal Audit and Control Division for audit. Here the bills are proved for accuracy of computation, the totals of miscellaneous charges for each controlling unit are checked with pre-determined totals, and the total of arrears items checked with unit control totals. Proved abstract sheet totals are posted to the controlling accounts. Bills are then released to the delivery clerk.

Preparation of Bills for Delivery

All bills are delivered to the premises unless requested otherwise by the owner. About two-thirds of our bills are delivered to the premises, by our own men. The remaining one-third are mailed to the owner or to such other person or company as is by him designated. The fact that we so mail about 100,000 such bills to about 45,000 different owners each quarter with a constant change in both the accounts concerned and the owners listed, has made it necessary to install quite an elaborate mailing list system. Suffice it to say that the delivery clerk pulls all bills that are to be mailed and mails them, sending the balance to the Meter Reading Bureau, where they are turned over to the bill distributors for delivery. The delivery clerk also attaches to each bill carrying an arrears item a delinquent notice form.

Cash Posting

Water bills may be paid at the main office of the Department or to any of the sub-agents of the American Express Co. with whom this Department has a contract. This procedure has established 550 neighborhood collection agencies, scattered throughout the Detroit district. All payments received on any given day, including returns by the agents, are posted to the customers' ledgers the following day. This is made possible by running a night force, who receive all cash stubs that are paid during the day. These clerks sort the stubs to ledger order, pulling ledger cards from the inactive districts, and running a recap tape of the cash stubs to balance with the cashier's total and to establish a predetermined total for each controlling unit. The stubs are therefore all ready for posting the following morning. Cash is posted to the ledger cards by means of cash posting machines, which post cash to the ledger cards in red figures and run a tape, showing transfer totals for each controlling unit and a grand total for each district. The operator checks the control totals with the predetermined totals as she progresses with the work, with the result that at the end of the day there is no question as to the balance, for the reason that each operator has been in balance all day. The recap tape is checked with the cash posting machine tape and sent to the internal audit and control division for entry to the controlling accounts.

Penalty Posting

Ten days after due date, the 5 per cent penalty charge for late payment is posted to the customers' ledger. This is posted by means of a machine identical to the cash posting machine, except a black ribbon is used. Penalty is posted in the manner shown on the display board. Transfer totals are taken at the end of each controlling unit, and these totals sent to the Internal Audit and Control Division for entry. The Collection Division of the Department is geared to the Customer Accounting Bureau and comes into mesh at this point. While the clerk who posts penalty is going through the accounts, he sets aside all the ledger cards that are carrying an unpaid balance of over $1, thus establishing the delinquent list.

Collections

The cards set aside by the penalty poster are turned over to the office section of the Collection Bureau, where past-due bills are typed for all accounts carrying delinquent balances under $5 and delinquent bills typed for all accounts with balances over $5. The past-due bills are mailed to the customers, but are not followed up by the field force of the Collection Bureau. Delinquent bills are typed in triplicate, one copy being retained by the office, for office and field follow-up, one copy mailed to the premises, and one to the owner, if the owner does not live on the premises. The delinquent bill also serves as a notice of shut-off. Time does not permit a description of our collection routine, but the principal forms used are posted on the display board.

Adjustments

All entries to the ledger card made at any time other than the scheduled time for that particular operation are considered adjustments. All items posted to the control at the scheduled time are reported to the control by proof sheets. All entries made at any other time are reported to the control by adjustment slips. Under the classification of adjustments, then come: final bills, special bills, cancellations, refunds, transfers and sundry debits. All adjustments are handled by the adjustment clerk, who makes the required entries to the card, writes the adjustment slip, thoroughly describing the transaction, and presents it to the head of the Bureau, or his assistant, for an O.K.

Internal Audit and Control

It is generally agreed that a customer accounting system that is not under complete control and in balance both internally and with the general ledger cannot be considered satisfactory, no matter how well it appears to be operating otherwise. Our control ledger is entrusted to a senior clerk, acting as control keeper. A master control consisting of 40 controlling accounts, one for each of the 36 districts and 4 for other divisions peculiar to this Department, is maintained. This ledger is arranged to show a daily revenue distribution, cash receipts and balance outstanding. It is a daily summary of all entries made to customers' accounts. The control keeper receives his data from proof sheets and adjustment slips, as above described. A mathematical proof of control entry has been worked out and is applied daily, proving that entries are made in the correct amounts, and to the proper accounts. Each of the district controlling accounts represents about 7,500 customers' accounts. This is, of course, too many for balancing purposes, so a control was set up for each reading route, consisting of approximately 170 accounts. Since

we have at present 1,756 reading routes, it means that we have 1,756 of these sub-controlling accounts, known as route controls. To these controls are entered only the balance at the last balancing date and the total daily debit and credit items. If this control is accurately kept, it will show a balance outstanding in the corresponding route for any given date. If it were known that no error would ever be made on either control or ledger card, trial balances would be unnecessary, but we all know that in spite of all precautions taken to prevent it, errors will occur, hence a periodical trial balance is essential.

Running a trial balance of customers' accounts is often considered a difficult and expensive operation; it formerly was for us. It is now one of our simplest operations. You will recall that all unpaid balances are posted to the current bill, hence to the proof sheet. The sum of the individual balances for the route is then the "outstanding balance" at that time and should check with the control. If it does not, we have only 170 accounts to check. The error is found in a few minutes, corrected, and the controlling account is balanced. The small control unit and the cycle plan of balancing have made this possible. The route control is kept in balance with the master control, which in turn is kept in balance with the general ledger by means of a monthly trial balance.

The abstract sheet contains a great deal of information readily available for statistical purposes. The compilation and tabulation of these data are daily routine operations, the result of which is shown in the Customers' Accounts Bureau Annual Statistical Report.

—ACKNOWLEDGMENT.—A paper presented before the Public Works Congress in Toronto, Ont. Burroughs public utility billing machines are used by the Detroit Department of Water Supply.

Radio Becomes a Good Right Arm for Police

RADIO communication has sold itself to 567 municipal and county police stations during the ten-year period since its first use by a few municipal departments. Considerable technical progress has been made in this field over the decade, and one of the latest models to win favor is the two-way radio system which is used in 317 stations. Since its experimental days in 1934, this system has proved advantageous because it allows continuous two-way contact with patrol cars, almost completely eliminates dead-spots, and is much cheaper than one-way broadcasting on 1610-2490 kilocycles. So far, two-way radio has been found best adapted to the needs of small or medium-sized cities set off by themselves, Boston being the only large city which has installed it on an extensive scale. But Nassau County, N. Y., is now experimenting with a two-way county hook-up, and surely this system admits of many possibilities as yet untested.

The use of radio has greatly aided state police forces in speeding cars to scenes of crime and in concentrating them in large numbers when necessary. In 1930, Michigan set the example, and by the end of 1936, 112 state police radio stations were operating or were under construction in 17 states. West Virginia's Legislature, just adjourned, approved an appropriation for a state police radio system, and Virginia, with an appropriation made last year, is studying the prospect. New Jersey, which has both county and city systems, has a special commission at work on a state-wide system.

Inter-city communication was a somewhat troublesome growth in its first stages, since it interfered with local police radio calls. The problem was solved in 1934, however, by the Associated Police Communications Officers, which developed a code for the purpose, leaving voice for intra-city messages. The Federal Communications Commission, now issuing zone and inter-zone licenses to key stations in the inter-city network, has made Rule 337-a, which states that after January 1, 1938, all inter-city police radio communications must be in code and through zone and inter-zone stations.

The broadest use of police radio yet hinted at came from an expression of interest by Mexico and Cuba in an extension of U. S. police radio over their borders. An engineering conference of radio experts was recently held in Havana to discuss this international use of radio.

The *Police Chiefs' News Letter* forecasts that during the next five years many more municipal, county and state police departments will equip themselves, with most of the systems financed from taxes and a few financed by public subscription.

Installation of radio has contributed to direct savings in man-power by stimulating the reorganization of all communications and of record systems, by reducing the number of precinct stations needed, and by speeding motorization of patrol work.

Cities Urged to "Program" Public Works

CITIES that regard public works planning as a necessity—not as a luxury or a phase of emergency work relief—are following the economical course these days, according to Frank W. Herring, Executive Director of the American Public Works Association.

In the current issue of the *Public Works Engineers' News Letter* issued by the Association, Mr. Herring says:

"Too often in the past, particularly during the years of deepening depression and declining tax revenues, planning activities have been looked on as frills, as non-essentials, and have been either starved or sacrificed completely. Now that local governments are returning to a better-nourished state, it is necessary, if only for reasons of true economy, that planning activity be re-established in those communities that abandoned it, and introduced in those that have never known its benefits."

These are among the benefits which Mr. Herring finds in a proper program:

1. It will conserve public funds for tomorrow's important job and prevent the exhaustion of financial resources today for the construction of items of secondary importance.

2. It will serve as a defense against the demands of minority groups for municipal improvements that would be in conflict with the community's long-run interest.

3. Facilities installed today can be made large enough to meet the increased demands of the future, thereby avoiding the disproportionate expense so frequently involved in enlargements.

4. Interferences and conflicts between two or more improvements, which would otherwise not be disclosed until the future, can be avoided.

Three Methods of Aeration in One Activated Sludge Plant

London, Ontario, Has Added Progressively to the Original Plant Other Novel Features—Treats Strong Industrial Wastes

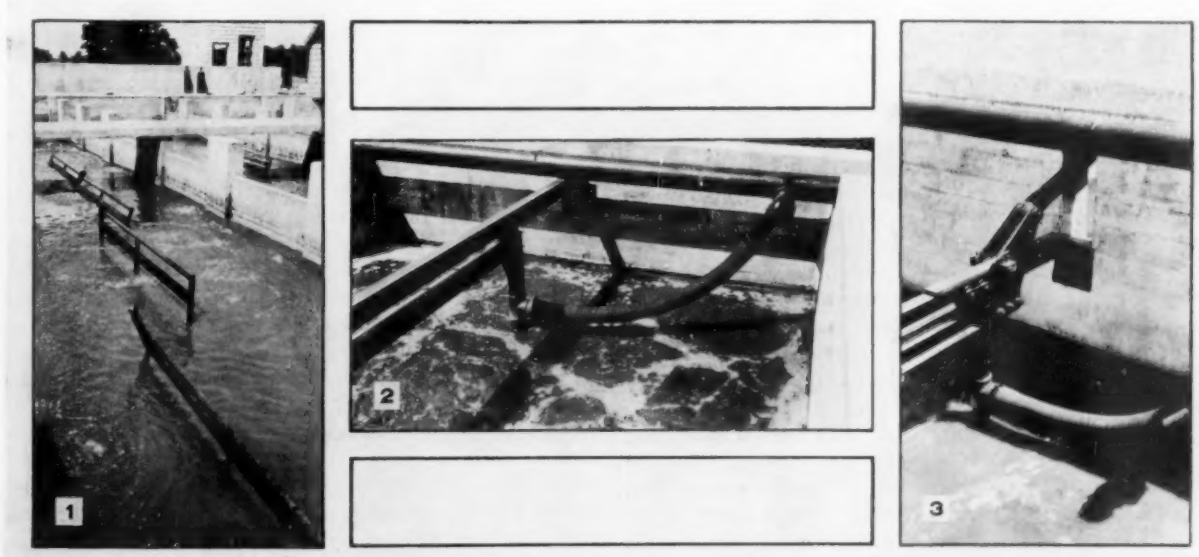
By THEODORE REED KENDALL
Engineering Editor, THE AMERICAN CITY

THE West End sewage-treatment plant of London, Ont., is a monument to the ingenuity of its designer and a most interesting study in the progressive development of methods of aeration and experiments in handling grit, screenings and sludge disposal. The plant receives a daily quota of 9,000,000 U. S. gallons, made up of some domestic sewage, tannery wastes, wastes from two large breweries, dyes from a large hosiery mill and by-products from a chemical plant. The sewage flows to the plant through a 48-inch sewer laid as an inverted siphon. The siphon effect extends for approximately one mile from the plant. In addition to the main sewer, a 20-inch cast iron pipe sewer, acting as a force main, delivers the sewage to the plant from the main pumping station in West London. The station handles the combined flow from two interceptors and one trunk sewer which are too low to allow gravity flow to the plant. The pumping station is equipped with four 8-inch Aurora pumps, each driven by a 35-hp Crocker-Wheeler electric motor, and can handle 1,350 gallons per minute. The pumping capacity required varies throughout the day and throughout the seasons, so the number of pumps used varies from hour to hour.

Removal of Grit and Screenings

At the point where the sewage enters the plant there is an overflow weir to guard against flooding, set so as to deliver all over 9,000,000 U. S. gallons direct to the river. In the entrance flume the sewage receives a small amount of aeration from air introduced through porous plates set in the bottom of the 12-foot depth of flume. This aeration removes a considerable amount of grease which collects at the effluent end of the channel, works itself into balls and is removed by hand screens from time to time. Aeration is not used at night and is resorted to only during a part of the day. In addition to removing grease from the sewage, the air aids in cleaning the bottom of the flume, permitting all grit and deposited organic matter to be carried over to the grit chamber.

The effluent from the entrance flume flows through a 30-inch tile pipe set at the bottom of the channel, deliver-



TWO OF THE THREE METHODS OF AERATION USED AT THE WEST END SEWAGE-TREATMENT WORKS, LONDON, ONTARIO

1. The paddle type aerators. 2. I-beam and hose hook-up for aerators in the third part of the plant. 3. The reciprocating mechanism for the aerators in the third section

ing to a short section of stilling flume in which is set a weir connected with a Simplex recording meter. From the weir the sewage flows to a single grit chamber. This was formerly double, but with improvements in the grit chamber it has been unnecessary to use the second section, so that it has been turned into an attractive flower-bed running along the east end of the plant.

The device for removing grit is simple and effective. The bottom of the grit chamber slopes rather steeply to one side, so that the grit collects in a narrow channel at that side. The grit-removal device is a metal plate 5 feet square, with a bucket having an inside measurement of about 6 x 4½ inches located at each corner. The plate is rotated by a small motor and is run intermittently during the day. The buckets scoop the grit from the narrow channel, and as they reach a vertical position a fine stream of water strikes the inside of the buckets, completely cleaning them. The grit, which is practically free of organic matter, drops onto an apron and thence onto a section of porous tile, permitting it to drain. In one day after a light rainstorm which was the first after a long dry spell, this device removed 37 wheelbarrow loads of grit from the grit channel. The grit channel is 45 feet long and 3 feet 6 inches wide at the top, and has a flow depth of 6 feet.

Methods of Screening

The sewage flows into the screen house and turns a right angle to flow through two bar screens with ½-inch openings. These screens are cleaned automatically by ingeniously devised rakes operated by paddle wheels moved by the sewage. There are six arms on each cleaning device which have sheet metal paddles. The rakes have teeth fitting closely between the screen bars. The rakes are cleaned by scrapers which are pushed out by means of metal guides set in the sides of the channel, when the teeth reach a horizontal position, thus removing the screenings. The scrapers fall back by gravity when the arm reaches a vertical position.

The sewage then flows to the fine screens, which are four in number, consisting of a single segment on each of the six arms of each screen, composed of 6-mesh galvanized 19-gage wire. On a fifth screen, used exclusively for sludge, a 12-mesh wire is used. The screens are dragged through the channel against the sewage flow by chain drive, and when they reach the vertical position, they fall over onto a bumper bar which drops the screenings into a V-shaped hopper. The screenings are removed from the hopper by a screw running through the bearing and delivering them to a wire basket. The screenings are shoveled to a wheelbarrow and taken to a concrete platform, from which farmers haul them away. These screenings have a high fertilizing value, since a considerable volume of activated sludge is delivered to the influent channel and is removed from the sewage with the screenings.

Sludge from the re-aeration tanks, to be described later, is returned to the sewage flow at any one or more of three points, namely, to the sludge screen, the fines continuing on with the sewage; to the incoming sewage ahead of the fine screens; or direct to the first two sewage aeration tanks.

Three Types of Aeration

The original West End plant, one of three treating the sewage of London, was built in 1930. Since then two additions have been made to the plant, each involving a different method of aeration.

The first channel at the south end of the original tank installation is used as a re-aeration channel for the sewage flowing to the original plants as well as to the second and third aeration sections. The total flow of sewage in the plant, averaging 7,800,000 U. S. gallons daily, is aerated for six hours in the aeration tanks.

The second channel in the first or original section of the plant is the first aeration tank of that section. In Section 1, aeration is by means of porous plates set along one side of each channel, giving the sewage a spiral flow through these tanks. The last six tanks in the original plant are used for the re-aeration of sludge pumped from the clarifiers. The aerated sewage from Section 1 of the plant is joined by the sewage from Section 2 and flows to two Francis Hankin clarifiers, each 50 feet in diameter. The flow of sewage is across the tank and over a weir to the final settling basin. The sweeps moving the sludge to the central sump rotate 1/20 rpm.

The final settling tank, in which the sewage is detained from 40 to 45 minutes, has no sweeps and is built with a hopper bottom. The sewage enters at the center in a 12-foot diameter circular section and flows downward over an inverted U or pan, and then outward through three 3-foot removable screens. The solids collect in the hopper bottom and are pumped out. The effluent from the secondary settling tank flows underneath the ring weir at the outside and then over a metal weir and into the effluent channel. The secondary settling tank is unwatered about three times a week because of the brewery yeast, which grows rapidly, causing bubbles which tend to lift the sludge. The gas, being carbon dioxide, is innocuous, but by raising sludge to the surface it reduces the effectiveness of the settling tank.

The second aeration section of the plant was built in the winter of 1933 and the spring of 1934. Aeration is by means of sweeps of perforated 1¼-inch pipe with the holes 4½ inches apart. At the end of the supporting arms are spring valves which are opened admitting air to the horizontal perforated pipe as the end of the plunger valve is pressed against steel guides, which start at the mid-depth of the sewage and continue around to mid-depth on the up sweep.

The air enters the system through hollow ports in the shaft, and the sweeps are turned by electric motors and a jackshaft and chain drive. Some difficulty has been experienced with this aeration system because the valves stick. This is caused by fine hair from the tannery wastes. Each sweep has a 6-inch plate running across its entire length and about 4 inches from the perforated pipe, which acts both as a brace and as a stirring mechanism.

From the second section of the plant the sewage flows to the same two clarifiers used in the older section of the plant.

The third section, which has just been completed, has a very effective aerating device invented by the City Engineer. It consists of pairs of perforated 1¼-inch pipe moved 3 feet back and forth across the bottom of the tank and about ½ to ¾ of an inch above the bottom. These are attached by tees to 3-inch pipe risers, spaced 3 feet apart, supported by I-beams running the length of the tank. The I-beams are carried by small dollies running on stationary I-beams extending the full length of the

tank. A crank and pinion driving device moves the lower I-beam and aeration pipes back and forth, permitting aeration of every square inch of the bottom of the tank. Air is piped to the risers by a flexible 3-inch rubber hose at each end, equipped with a 3-inch mine cock for control. This system of aeration is so simple that it requires only one 3/5-horsepower motor to move the total of 960 feet of aerators.

From the aeration tanks the sewage flows to a 65-foot diameter Francis Hankin center feed clarifier with 16 sides and an overflow weir running around the outside.

Sludge Handling

The sludge from Section 3 is taken by air lift from the clarifier and delivered to the last two sections of the aeration tanks of Section 2 as an experiment. It is planned finally to deliver the sludge from Section 3 direct to the sludge re-aeration tanks in the original plant.

For Sections 1 and 2 the sludge is removed from the clarifiers by 8-inch air lifts and a 5-inch vertical centrifugal Fullway pump, manufactured by the Pulsometer Engineering Co., to the re-aeration tanks, direct to storage for later delivery to the sludge filter or to the trenches. For some time the sludge has been disposed of by digging a series of trenches about 2,000 feet in length in sandy and gravelly ground, and then covering the trenches with loose straw to keep down the odors. A crew of seven men is required to maintain these trenches.

A proposition has been presented to the city of London for the disposal of its re-aerated sludge by a contractor who would agree to use two 1,000-gallon trucks and haul away 20,000 gallons of sludge, 95 per cent water, daily throughout the year, to farmers for fertilizing their fields and truck gardens.

Air-Compression Units

Two concrete compressor houses have been built. No. 1 serves the original plant and Section 2, and furnishes air for the pre-aeration of the sewage for the removal of grease and also for the pre-aeration after the activated sludge has been introduced. This compressor house contains two 1,500-cfm and one 1,000-cfm Canadian-Ingersoll-Rand compressors driven by Lancashire motors and delivering air at 6 pounds pressure.

No. 2 compressor house, furnishing air for Section 3 of the plant, has one 1,500 and one 1,000-cfm Canadian-Ingersoll-Rand compressor with Lancashire motors.

Experimental Work with Horizontal Sludge Filter

In the spring of 1936 a Caloco horizontal-type vacuum filter was installed in a temporary building for the experimental filtering of decanted sludge treated with ferric chloride and later also with lime. The sludge delivered to the machine has 4.5 per cent solids, to which originally 14 to 16 per cent ferric chloride was added in the mixing tanks. This was later cut to 6 per cent ferric chloride and 15 to 16 per cent lime, giving the sludge a pH of 11.9 for filtering.

The filter made by the Canadian Locomotive Works, Kingston, Ont., is only 2 feet wide. A 6-foot machine would be needed to handle all the sludge for this plant. Sludge from the re-aeration tank is pumped to the supply tank in a temporary house, then through a feeder which controls the rate of flow to the mixing tanks, where the ferric chloride is added at one end and lime at the other. Mixing is done by a paddle agitator. The sludge then flows to the feeder box on the machine, which is equipped with a screw mixer looking very much like a series of lawn-mower blades, which stirs up the tannery hair and sludge. The sludge flows over a distributing apron onto the 3-foot belt of canton flannel, which is supported on a rubber belt 1¾ inches thick. The rubber belt has ribs on the top and ports in the bottom. A pair of deckle belts of rubber run 2 feet apart on either side to prevent the sludge from running off the edge.

VIEW ACROSS THE SLUDGE RE-AERATION TANKS TO THE PART THREE CLARIFIER FROM THE ROOF OF THE SCREEN HOUSE

A vacuum of 14 to 15 inches is applied over a 10-foot length of the belt, the ends of which have water seal. The water removed runs through the ports to a filtrate tank and thence to the incoming sewage. The belt delivers a sludge of 78 to 80 per cent water at the end, which readily drops from the belt into the sludge car. This filter is run 24 hours a day with three 8-hour shifts with but one man on each shift. A second man would be required on each shift if a 6-foot machine were installed, so that one man could handle the machine while another attends to the application of chemicals.

Most of the unusual devices installed at the West End plant were invented by W. M. Veitch, City Engineer. L. F. Robertson is Engineer in charge of sewage disposal.

New Chemical Treatment Plant for Domestic Sewage and Wastes

Light Canning Load at Owosso, Mich., Does Not Unbalance Treatment

OWOSSO, MICH., a city of 15,000 population, has recently completed the construction of a new 2-mgd sewage-treatment plant using chemical treatment and with many possible combinations of operation. This city is located about 25 miles west of Flint and 30 miles northeast of Lansing in the center of a canning factory district. The plants at Owosso include corn, peas, tomatoes and pumpkin but most of them have good screening facilities, and not much of the organic wastes reaches the sewage plant, although large volumes of water do make their way into the sewers from the plants.

The new treatment plant has been built at a cost of $130,000 and has been landscaped as a WPA project, using city trucks, shovel and supervision. Construction, including the excavation, was done largely during the late fall and winter of 1934-35 to aid in the absorption of winter unemployed and the plant was completed and placed in operation in Jpne, 1936. All the concrete work on the main building up to the ground floor was done in the winter, and the structure was completely housed in a wood frame and canvas, with steam heat applied inside the cover.

The plant is located ¼-mile north of the city limits between the Shiawassee River and Michigan route 47 to Saginaw. A city park just below the plant on the river is used extensively for picnics. The sewage is delivered to the plant through a 30-inch reinforced concrete interceptor which crosses the river in a concrete pipe as a gravity flow line and not as a siphon. A sluice-gate at the entrance to the plant makes it possible to shut off the plant completely and divert the sewage directly to the river without treatment.

As the sewage enters the main building it passes through a coarse screen with 3-inch openings. The screen is hand-raked and the screenings are disposed of by burning. The sewage flows to the wet well just outside the building. The two-story building is 40 x 40 feet in plan.

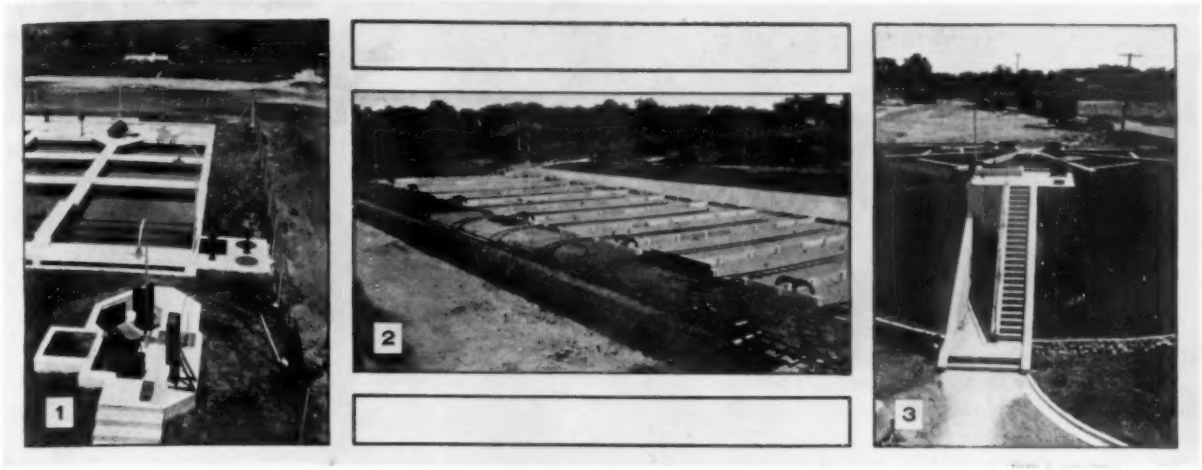
On the pump room floor or basement are the three pumps for the low lift to the tanks. They are Worthington centrifugal pumps of 1-, 2-, and 3-mgd capacity, with 7.5-, 10-, and 20-hp Howell motors respectively. There are no valves on the suction side, but on the discharge there are Chapman check-valves and gate-valves to the 16-inch line. A Skidmore automatic primer for the pump vacuum operated by water pressure from the city mains is located above in the screen room. The operation of the pumps is controlled by General Electric float switches and button control from the pump room.

The next level above the basement is the boiler-room floor, where the heating equipment and other accessories are located. An Ideal boiler with an oil burner provided heat for the building and the digester coils before gas from the digester became available for heating. Another Ideal gas boiler, which is also connected for heating the building as well as the digester coils, is rigged for using the digester gas.

On this floor are also the two sludge pumps, one a single and the other a double diaphragm Ames pump driven by Master motors, using a 5-hp on the double and a 3-hp on the single pump, with selective speed switches for both. Fourteen Chapman gate-valves grouped around the sludge pumps permit the transfer of sludge from any point in the plant to any other point and the recirculation of the sludge in the digester.

Two circulating pumps with ¼-hp Century motors feed the hot water to the digester coils, with the flow measured by a 2-inch Trident meter, and the temperature measured by two thermometers in the outgoing and the return lines. The digester coil water is maintained as an open line with a tank located in the top of the control chamber in the

THE MAIN BUILDING AND SEDIMENTATION TANKS OF THE NEW SEWAGE-TREATMENT PLANT AT OWOSSO, MICH., AS SEEN FROM THE DIGESTER



IMPORTANT SECTIONS OF THE OWOSSO, MICH., SEWAGE-TREATMENT PLANT

1. The comminutor and mechanism for intermittent operation in the foreground. One battery of settling tanks is seen beyond the comminutor. 2. The sludge drying beds with industrial railway track for hauling dried sludge. 3. The digester seen from the roof of the main building

digester. A pressure gage in the main building over the circulating pumps shows when the tank is full. The actual heater for the water in the digester coil is a steam coil with a thermostatic control.

On the boiler-room floor also is the Emco gas meter which measures the gas used in the boiler, the master meter being located in the digester control chamber. A Builders Iron Foundry venturi meter on the pump discharge operates the Wallace & Tiernan control mechanism on the the boiler-room level for the chlorinators located on the ground floor.

On the ground floor is a Shaw-Box Crane & Hoist Co. ¼-ton crane for raising the screenings from the basement, and an 8-inch diameter Toncan vent pipe running to within 4 inches of the floor of the screenings chamber and connected to a fan for exhausting any accumulation of gases in the screen chamber.

Operated from the ground floor is a crane for handling the motors and pumps in the basement below. Connecting with this in the basement is a 2-ton Tribloc crane.

A single control panel on the ground floor starts or stops all equipment outside as well as the current to the pumps below. They, however, must be started from below. A Chronoflo recording meter on the ground floor shows the rate of flow and the total flow of pumped sewage in the plant. An elevator shaft was left at one corner of the building but has not been equipped for the handling of chemicals as yet.

The chemicals are applied by means of a Proportioneers "Decanter," which consists of duplicate machines of 200 gallons capacity each. The tanks are rubber-lined to resist the action of the ferric chloride solution. The chloride in anhydrous form is made into a solution on the second floor and the tank filled. Two Omega dry feeders are used for the application of lime as milk of lime. A G-E control panel adjacent to the dry feed machine and the Decanters has an automatic feature so that when the flow of sewage increases and only one of each of the sets of chemical feeders is working, the other will be thrown into operation. Similarly, when the flow decreases, the second machine will be cut out. When the plant is shut down, that is, when the pumps are stopped, the automatic unit will cut out all the chemical feed machines. An American Gas Products gas heater close to the chemical feed machines provides hot water for domestic use at the plant.

In the chlorine room on the ground floor is a 2,000-pound Toledo springless platform scales on which the groups of cylinders of Pennsylvania Salt Works chlorine are set. A Wallace & Tiernan vacuum feed chlorinator controls the rate of feed of the chlorine. On this same floor is a complete laboratory for all routine tests in sewage-works operation. Operated from the hallway just outside the chlorine room is a ventilating fan which will exhaust all chlorine fumes from the floor level.

The Treatment Works

From the pumps the sewage is delivered to a channel in which is a Chicago comminutor driven through a Universal gear drive by a 2-hp Howell motor. The comminutor is worked intermittently by a Telechron clock mechanism. The sewage flow from the pumps can be run through the comminutor and direct to the quick-mix chamber at the head of the tanks; or through the comminutor and direct to the far end of the tanks for plain sedimentation; or in either of the ways described above but by-passing the comminutor. The chemicals are applied to the sewage in the influent channel ahead of the comminutor or into the quick-mix chamber.

An International flash mixer consisting of a rotating plate with vanes on it lifts the water and mixes it with the chemicals at the same time. A 2-hp Howell motor and a Reeves belt-drive on the flash mixer provide for a number of different speeds of operation.

The tanks for the settling and mixing of the sewage are four in number. The two central tanks are 60 feet long and 9 feet wide and are equipped with paddles to give a rotary motion to the sewage in passing through. The two outer tanks are the same length but 35 feet wide. The flow depth of all tanks is 9 feet.

The tanks are oriented north and south, with the flash mixing chamber at the south and in the center. The tanks are so arranged through the ingeniously conceived channels and gates that the sewage from the comminutor can be run through one of the central tanks northward, back through the outer tank on the same side, then to the flash

mixer for the chemical dosage, north through the second central tank, back through the other outer tank, and thence to the river.

It is planned to take the chemical sludge from the final settling tank and recirculate it in the first settling tank during the summer to increase the clarification of the sewage in the preliminary settling. These tanks can be used in any combination for plain or chemical sedimentation. The two outer sedimentation tanks are equipped with Chain Belt sludge collectors with automatic scum collectors at the south end, which scrape the scum into a collecting trough, from which it is flushed daily by opening a hand valve and collecting the flow in a scum sump, from which it is pumped to the digester.

The effluent pipe is a 24-inch concrete pipe in which is provision for post chlorination.

The Digester

The digester is 60 feet in diameter by 22 feet deep at the side wall. In the control chamber are spigots for sampling all parts of the digester. The digester floor has four sumps, from which the sludge is pumped in any combination through the valves located in the floor in the control chamber. The digester has a stationary cover with a water seal and provides only a little storage for the gas.

Sludge Beds

There are thirteen sludge beds, each 20 x 70 feet and partitioned off with concrete posts and slabs set in the posts. The beds have 8 inches of coarse sand and underdrains leading to headers which flow direct to the river. An industrial track runs into each bed and connects with a collection track in front. This leads to the dumping platform at one end, from which the suldge can be delivered to any truck that will haul it away. The industrial railway cars are pushed by hand.

The new chemical treatment plant at Owosso was designed by H. P. Jones & Co., Consulting Engineers, Toledo, Ohio, and is operated by L. R. Jennings as Superintendent. The dry-weather flow at the plant during the hot spell in July, 1936, just after the plant was placed in operation, varied from 1.75 to 2 mgd. The sewers are mostly sanitary, with a few storm-water connections, which are rapidly being eliminated.

Improved Incinerator Operation

Higher Temperatures a Guard Against Odors, Hand Labor Reduced, Dust Eliminated

IN the early days of incineration, many plants were intended primarily for burning garbage, and little consideration was given to providing the necessary fuel continuously to maintain a deodorizing temperature. In those days it was not uncommon for garbage incinerators to cause objectionable odors. Since the necessity of maintaining deodorizing temperatures has been clearly understood, as well as the inability to do this unless sufficient heat value was present in the material being burned, there have been few cases where objectionable odors were emitted from plants unless caused by failure to operate reasonably.

In later years more consideration has been given to the structural details of furnace design, with the result that maintenance has been reduced and the life of furnaces has been increased. The design of refuse furnaces has approached more closely that of boiler furnaces and, as sound mechanical engineering details have been emphasized, the design of the plant has improved.

Reduction in Labor Required

Substantial reductions have been made, not only in the amount of hand labor required in operation, but in eliminating some of the more objectionable phases of hand labor. Probably the greatest improvement in this direction has been made in charging facilities. Formerly, most plants were charged by hand, while now most large plants are crane-fired, as are also many of the small ones. On the other hand, in localities where labor is always cheap and plentiful, some large plants have been designed for hand charging, but the design of the plant in such cases has occasionally been such that the operations of dumping and charging are segregated, with an increase in safety and comfort of the charging men, and a minimizing of the disagreeableness of the task of handling raw garbage. A recent development in charging equipment is the use of electric gear motors and clutches in place of air rams.

Ash Handling

Labor has also been reduced and working conditions have been improved in the handling of the ashes. Until a few years ago, ashes were customarily raked from the grates directly onto the stoking floor. Clouds of hot dust and disagreeable smoke filled the stoking room on such occasions. Frequently the ashes were quenched on the floor, by spraying water over them with a garden hose, with consequent clouds of steam. An attempt was made to improve this condition by providing large ventilating hoods, connected with the forced-draft fans, across the front of the furnaces. Later, dumping grates were provided by means of which the ashes were dropped into ash-pits below the stoking floor for subsequent removal into wheelbarrows or cars in an ash tunnel or basement. While this reduced the arduous labor in the stoking room and improved the working conditions there, it merely transferred the disagreeable working conditions from an otherwise well-ventilated stoking room to what was generally an ill-ventilated basement.

The next improvement came in providing quenchers in each ash-pit, either for continual or for intermittent use,

with water-sealed gates, which permitted reasonably high forced draft without blowing smoke into the ash tunnel. With the water-sealed gates, provision has been made for operating the gates either by oil rams or by hand-ratchet wrenches in the smaller plants. Substitution of electric motor-operated ash trucks, running in the tunnel from the pits to a skip hoist, reduced the labor required in the ash tunnel and increased the rate at which ashes can be handled through the plant. Frequently this is now accomplished by driving motor trucks directly through the ash tunnel and loading them as they pass to each ash-pit, by merely opening the ash-gate and letting the ashes fall from the pits into the truck, thus saving the rehandling operations otherwise required.

In plants burning very dusty fuel, such as mixed refuse or rubbish, with a large percentage of household ashes, consideration is being given to the elimination of the dust from handling the refuse in the receiving bin. In order to secure the storage volume required, it frequently is necessary to provide deep bins and, as the refuse falls through a great distance, clouds of dust rise to the charging floor. Provision is being made in designs by the Department of Sanitation in New York City, and elsewhere, for capturing this dust at the top of the bin wall. Controlling the dust, however, is not a simple matter, for the length of the bin is great and the space through which the material is dumped is high. This is one feature of plant design which deserves careful study.

For a number of years records of combustion-chamber temperature have been kept in many plants, although frequently no use is made of these records, even in controlling the temperature of the fires, because it is so simple to tell without instruments the temperature which is being maintained. Recently, automatic temperature control has been installed, in addition to the indicating and recording equipment in a few plants, as at Washington, D. C., and Newton, Mass. In the plants mentioned, this has been obtained by controlling the admission of secondary air. In the new Rochester, N. Y., plant provision is being made for automatic control of the main dampers as well.

Heat Utilization

In several plants built about 1907, boilers were installed for utilizing the heat from combustion of the refuse. These plants performed satisfactorily for many years, most of them up to the present time. One of them has recently been enlarged and continues to sell its steam to the local public utility. At the Providence, R. I., plant, recently completed, with waste-heat boilers operating at a little more than 200-pound pressure, electricity is generated and is used at the adjacent activated-sludge sewage-treatment plant and for pumping sewage. The Manchester, N. H., plant, under construction, is provided with a boiler capacity of about 11,000 pounds of steam per hour, for use in the adjacent asphalt plant, at a pressure of 150 pounds. New York City is reported to be negotiating with a private concern for the sale of steam from one plant which is now under construction, for which the annual charge would be in the neighborhood of $200,000.

The Rochester, N. Y., incinerator will generate at peak-load about 50,000 pounds of steam per hour, for use in the adjacent garbage-reduction plant. The boilers are designed for 250 pounds pressure, and it is expected that surplus steam may be sold to the Rochester Gas & Electric Co., whose generating plant is adjacent to the garbage plant and from which steam is now purchased by the city. In order that the production of steam at the incinerator may always be synchronized with the demands of the reduction plant, auxiliary oil burners are being provided under the boilers. Burners also are being provided on the furnaces themselves, to facilitate combustion on those occasions when the refuse is extremely wet.

Chimney Design

Chimney design has been greatly modified in recent years. When maintaining high temperatures of combustion in plants in which the flue gases are not cooled by passing through boilers, it is necessary to line the chimneys with refractory materials. With the frequent wide changes of temperature of the gases, it has been found advisable, with independently supported linings, to provide a wrought iron corset. In addition, a renewable target well for the bottom portion of the chimney is commonly provided. In the Charleston, S. C., plant a refractory lining, supported sectionally on the radial brick chimney shaft, has been used, in this case the greatest thickness of lining being a single 4½-inch course of firebrick.

—From the Second Report of a Committee of the Sanitary Engineering Division, American Society of Civil Engineers, presented January, 1937.

Portable Power During Louisville's Flood

THE value of every little bit of power brought in where the regular supply has failed was frequently exemplified during the Mid-West floods. A 20-kw Caterpillar diesel generating set, after furnishing emergency power for turning out a million cigarettes per 24 hours for four days at a Louisville, Ky., factory, was rushed to the local police-radio station, permitting resumption of that vital service. Ten diesel tractors in this area pulled fire apparatus to a major conflagration through otherwise unnavigable streets in this grave emergency situation.

This 20-kw diesel set that kept Louisville police radio in operation is about 2½ feet wide by 4 feet high and 9 feet long, and weighs under 5,000 pounds. It uses a gallon of fuel oil per hour, and will thus operate for 44 hours off the standard drum shown in the photograph reproduced in the opposite column.

REPAIRING A 33-YEAR-OLD ASPHALT PAVEMENT IN FORT WAYNE, IND., AND ADVERTISING THE FACT RIGHT ON THE JOB

Publicizing Pavement Ages

Fort Wayne Makes No Secret of the Life of Pavements Under Repair

By W. H. DROEGE
Asphalt Superintendent and Materials Chemist, Fort Wayne, Ind.

THE cost of repairs to the asphalt streets of Fort Wayne shows substantially the same trends as in the past. The policy of making immediate small repairs whenever possible, notwithstanding adverse weather conditions, is very much worth while, and is reflected in low maintenance costs. Beginning January 5, 1937, a new step in public information was taken. When repairs are being made to an asphalt pavement, the trucks carry a placard on the cab, "The Pavement Now Being Repaired Is ..... Years Old," for the information of pedestrian and motorist alike.

Maintenance Costs

The total maintenance cost per square yard of asphalt pavements for 1936 was $0.062, a reduction of approximately 10 per cent as compared with 1935. This cost is the equivalent of about $72 per mile for a pavement 20 feet wide. The effect of seasonal changes is noticeable in the average age of pavements repaired during the summer and winter months respectively, since only emergency repairs are made during very cold weather. The average age was higher in 1936 than in 1935—30 against 28 for January, and 19 against 16 in August, respectively. The oldest pavement, West Wayne, from Nelson to Harrison, was laid in 1889, while the average age of the pavements repaired in 1936 was 23.87 years.

1935	Tons New Asphalt Mixtures	Days Repair Operation	Average Age of Pavements Repaired
January	23	8	30.20
February	72	6	28.80
March	228	26	25.40
April	260	25	25.00
May	243	23	26.40
June	151	20	19.90
July	144	23	19.83
August	105	18	19.20
September	106	21	21.40
October	78	14	21.60
November	105	20	22.30
December	79	20	26.50

Total tons new asphalt mix manufactured and used during 1936*	1,594
Total days actual repair operation	224
Average age (years), all asphalt pavements 1936	23.87
Total area of asphalt pavement under maintenance (square yards)	2,835,246
Payroll (tests, supervision, manufacture, transporting, placing mixtures)	$15,648.41
Materials (asphalt, filler, sand, stone, cement, fuel, torches, oil, etc.)	7,144.12
Operating expense (telephone, plant repairs, lubricants, gasoline, trucks and roller, hardware, license plates, etc.)	1,156.88
Total	$23,949.41
Less inventory	881.55
Net cost	$23,067.86

* Includes 365 tons used for repair over other type surfaces, such as sidewalks, alleys, bridge approaches, etc.

Graduate Scholarships in City Planning

At Massachusetts Institute of Technology, two Research Scholarships of $500 each, covering tuition in the graduate year, are open to candidates for the degree of Master in City Planning. An applicant must have received his bachelor's degree in either architecture or civil engineering and must have completed at least one year's practical work in the field of city planning or housing. Applications for these scholarships should be filed with Dean William Emerson, School of Architecture, Massachusetts Institute of Technology, 491 Boylston St., Boston, Mass., not later than April 30, 1937.

Los Angeles Buys Local Gas Company's Electric System

Thus the City Acquires 55 Per Cent More Load and Revenue— Assets Now Total $171,795,870

By E. F. SCATTERGOOD
Chief Electrical Engineer and General Manager,
Bureau of Power & Light, Los Angeles

AT midnight, January 31, 1937, the Bureau of Power and Light began serving the former electric consumers of the Los Angeles Gas and Electric Corporation. At a special election held in Los Angeles on December 8, 1936, the voters, by a majority of better than two to one, had approved the plan of the municipal Bureau of Power and Light to acquire the electric properties of the Corporation.

The plan of purchase was embodied in a charter amendment which included provision for the settlement of all pending litigation between the city and the Corporation and the granting of a gas franchise to the Corporation and its associated companies for a period of 35 years. Consideration for the electric properties was $46,340,000. On January 3, the newly adopted charter amendment was ratified by the State Legislature, and the purchase was completed on January 29, when the Board of Water and Power Commissioners of the city of Los Angeles accepted deeds to the properties and placed in escrow the purchase price.

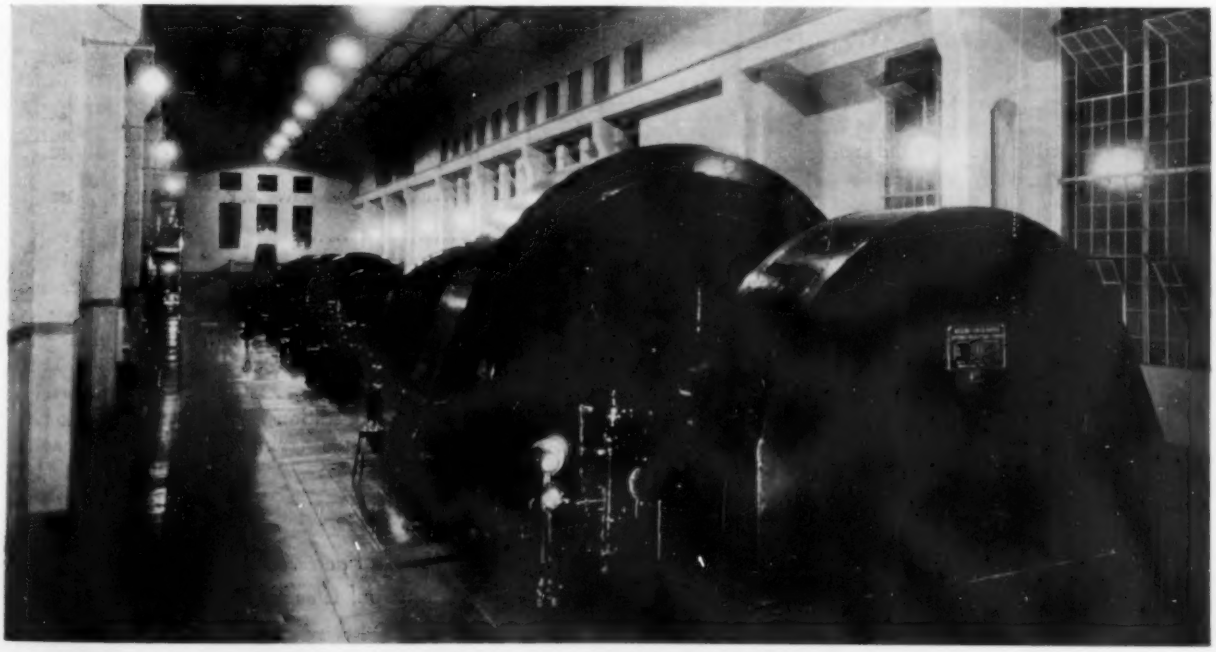
The municipal generating system, which is owned in fee by the city and operated by the Bureau of Power and Light, is 19 years old. Giving effect to the recent acquisition, the municipal electric system now has assets of $171,795,870. Bonded indebtedness amounts to $99,796,000, all of which is payable out of the power revenue fund. Earned surplus of the Bureau at the time of acquisition had amounted to $51,414,054.

A combined summary of income statements of the Bureau and the Corporation's electric system for the twelve-months period ended November 30, 1936, shows the following:

Gross Earnings	Net Income Before Depreciation and Interest	Provision for Depreciation	Net Income Before Interest
$24,425,332	$13,416,996	$4,066,362	$9,350,604

Net income after interest for the year 1937-38 is estimated by A. B. Roberts, consulting engineer, at $6,344,000.

The Bureau is now serving all the retail electric consumers within the present limits of the city of Los Angeles, with the exception that, pending the completion of legal



INTERIOR OF SAN FRANCISQUITO POWER PLANT NO. 1, LARGEST OF FIVE HYDROELECTRIC PLANTS OPERATED ALONG THE OWENS RIVER AQUEDUCT BY THE LOS ANGELES MUNICIPAL BUREAU OF POWER AND LIGHT

Located 54 miles north of the city, the building houses five generating units which have a combined capacity of 96,200 hp. Water which turns the turbine wheels of the giant generators comes from Fairmont reservoir, through 8 miles of pressure tunnel. Water also can be diverted into the tunnel from Bouquet reservoir

proceedings for the acquisition of certain properties of the Southern California Edison Co., that company will continue to serve consumers in certain territory annexed to or consolidated with the city since July 1, 1919. The business served in such territory amounts to less than 10 per cent of the total service within the city.

The following tabulation shows the number of electric meters, kilowatt-hour sales and revenue of the two systems, as of June 30, 1936, now consolidated:

	Electric Meters	Kwh Sales	Electric Revenue
Power Bureau	270,843	742,376,915	$15,512,542
Corporation	181,074	403,841,650	8,736,587
Total	451,917	1,146,218,565	$24,249,129

The Power Bureau's principal source of supply of electricity in the future will be from the Boulder Canyon project, now nearing completion and already in partial operation. Under date of April 26, 1930, the United States as lessor made a lease of power privilege to the city, which was supplemented by further contracts dated May 28, 1930, and September 23, 1931, respectively. Under this lease, four generating units with a combined maximum capacity of 330,000 kw have been installed for the city's use for a period of 50 years. This lease will not become operative until the Secretary of the Interior announces that water capable of generating 1,250,000,000 kwh per year is available, but to the extent that released water permits, the units are now being operated by the Bureau of Power and Light, under temporary permit and license, until all the units have been installed and are in operation. The fourth unit will be placed in operation in the near future. The city's Boulder Dam power production as of February, 1936, amounted to 143,000 kw.

Generating facilities serving the municipal electric system, exclusive of the facilities purchased from the Corporation, consist of five hydroelectric plants having a combined capacity of approximately 110,600 kw, which supply approximately one-third of the system's requirements, the remaining approximate two-thirds having been purchased until the Boulder Canyon plants became operative in October, 1936, from the Southern California Edison Co. These plants are situated along the Los Angeles Aqueduct, a joint water and power project which extends south from the Owens River approximately 250 miles to Los Angeles. The largest two of these plants, namely San Francisquito plants No. 1 and No. 2, having a combined capacity of about 100,100 kw, are situated in San Francisquito Canyon approximately 50 miles north of the city, with 43,000 acre-feet of water storage for regulation.

Under an arrangement with the Southern California Edison Co. there has been made available for the Power Bureau's use steam-generating capacity of one 60,000-kw steam unit, as standby, at an annual cost of $575,000.

Energy from the Boulder Canyon plant is transmitted over a steel tower transmission line consisting of two 3-phase circuits, normally operating at 275,000 volts. Two separate parallel tower lines, each of single-circuit construction, extend for a distance of 225 miles from Boulder Dam. The remaining 41 miles of line to the city of Los Angeles are of double-circuit construction, with the two circuits suspended from the same tower. The capacity of the two circuits under ideal operating conditions is 292,000 kw. For conservative and stable operation, operating capacity has been fixed at 80 per cent of the above, or 234,000 kw. The line is sectionalized by two intermediate switching stations, dividing it into three sections, the purpose of which is to give the line greater stability in case of faults and to provide continuity of service.

Generating stations purchased from the Los Angeles Gas and Electric Corporation by the Bureau of Power and Light include the Seal Beach generating station, situated about 23 miles from the center of Los Angeles, and the Alameda Street generating station, located in the city proper. The former is equipped with two turbine generator units of 30,000 kw and 35,000 kw capacity at 80 per cent power factor, installed in 1925 and 1928 respectively, while the Alameda Street station is equipped with six turbine electric generator units having an aggregate capacity of 62,500 kw.

DATA ON GENERATING EQUIPMENT OF LOS ANGELES BUREAU OF POWER AND LIGHT

Gen. Unit — Prime Mover Make and Type	Generator	Continuous Kw Capacity at 80% P.F.	Year Installed
San Francisquito No. 1			
No. 1 Pelton duplex overhung impulse wheel	West.	9,375	1917
No. 2 Pelton duplex overhung impulse wheel	West.	9,375	1917
No. 3 Pelton duplex overhung impulse wheel	West	9,375	1917
No. 4 Pelton duplex overhung impulse wheel	West.	10,000	1923
No. 5 A. C. duplex overhung impulse wheel	A. C.	20,000	1928
San Francisquito No. 2			
No. 1 Wellman Seaver Morgan vertical reaction	G. E.	14,000	1920
No. 2 Wellman Seaver Morgan vertical reaction	G. E.	14,000	1920
No. 3 Newport News SB & DD Co. vertical reaction	A. C.	14,000	1932
San Fernando P.P.			
No. 1 S. Morgan Smith vertical reaction	G. E.	2,800	1922
No. 2 S. Morgan Smith vertical reaction	G. E.	2,800	1922
River Power Plant			
No. 1 Pelton double horizontal impulse	West.	2,880	1917
Franklin Power Plant			
No. 1 S. Morgan Smith vertical reaction	G. E.	2,000	1921
Alameda Street Steam Plant			
No. 1 General Electric horizontal	G. E.	17,500	1924
No. 4 General Electric horizontal	G. E.	10,000	1921
No. 5 General Electric horizontal	G. E.	17,500	1922
No. 6 General Electric horizontal	G. E.	17,500	1923
Seal Beach Steam Plant			
No. 1 Westinghouse horizontal	West.	30,000	1925
No. 2 General Electric horizontal	G. E.	35,000	1928
Boulder Power Plant			
N-1 Allis-Chalmers vertical reaction	G. E.	66,000	1936
N-2 Allis-Chalmers vertical reaction	G. E.	66,000	1936
N-3 Allis-Chalmers vertical reaction	West.	66,000	1937
N-4 Allis-Chalmers vertical reaction	West.	66,000	1936
Long Beach (leased unit)			
No. 9 General Electric horizontal	G. E.	52,000	1925
Total available capacity		554,105	

Inside Facts About 500
Municipal Electric Utilities

How much electricity does your municipality use? Does the city pay for it and, if so, how much? Not only are these questions answered for 500 municipalities, but the capacity, production, total revenues and expenses for the last fiscal year, are tabulated in The Municipal Index, 470 Fourth Avenue, New York.

Do Your City's Trees Reflect Your City's Character?

By JOHN W. WYNGAARD
Madison, Wisconsin

MOST municipal officers will agree that the inspiration derived from a beautiful street or park will encourage civic pride, and be vastly instrumental in building the character of the municipality.

City forestry deals with the use and the care of trees for the beautification of cities, as compared with commercial forestry, which is concerned with growing forests to produce wood. To the city forester is entrusted the job of improving the appearance of streets, parks and playgrounds, and thus adding to the comfort and civic health of cities by bringing a touch of nature to densely populated areas. To do this the city forester must be trained in the care of trees and in landscape design. He must be able to arrange trees and shrubs so that they add to the beauty and value of property, for it is a commonplace that a piece of property facing a well-planted street is far more desirable than another plot facing a barren thoroughfare. The trees for which the city forester is responsible should give welcome shade in summer, and be a bulwark against the winds and storms of winter, in addition to aiding property owners in maintaining attractive lawns.

A VIEW ALONG LINDEN DRIVE, MADISON, WISCONSIN

The Best Trees for City Streets

A good tree for street and park planning, according to the experts, must have a shapely crown and be attractive at all seasons. It must be hardy, little susceptible to insects and fungus disease, and able to endure city smoke. The elm, hard maple, and several varieties of oak have been recommended as among the best kinds for city planting.

In many parts of the country, especially in the Lake States, the American elm is held to be the best all-around street tree. Besides having great beauty, it withstands windstorms well and is a rapid grower, and its finely divided branches gives it a striking appearance even in winter. Among the best varieties of American elm are the vase and Moline types, which have an improved form and are immune from most diseases and insect pests.

The red oak grows rapidly and withstands windstorms well. The white oak is generally regarded as one of the most beautiful species, and is highly desirable for its fall coloring and longevity, but is a slow grower. The hard maple is a very fine street tree, with its fall coloring and splendidly shaped crown. The Norway maple, while not a native, is a good street tree because of its shapely crown and rapid growth, and the white ash is also highly esteemed by many, although it does not possess the grace and beauty of the elm. In drier areas, tests have shown that the hackberry does well as a street tree, and the basswood or linden is also very desirable for the better soils.

Studies by the Division of Land Economic Inventory of the State of Wisconsin have shown that evergreen trees are not widely used, because they cannot withstand the smoke and dust of cities as well as can the hardwood species. They thrive best in their own natural environment, but in parks or along highways free from smoke and dust, ever-

greens may be used with good results, if planting is done where conditions of soil and moisture are conducive to their growth.

Trees for planting along streets should have a diameter of 2 to 2½ inches. If a larger tree is used, it is often difficult to get a good root system. The roots of smaller trees become established, and although the cost is less, the trees will develop as rapidly as larger ones. Street trees for planting are usually obtained from nurseries, for the nursery-grown tree with its superior root system will thrive better than one taken from the woods. Trees in nurseries have their roots pruned, which results in numbers of rootlets which are the feeders for the tree.

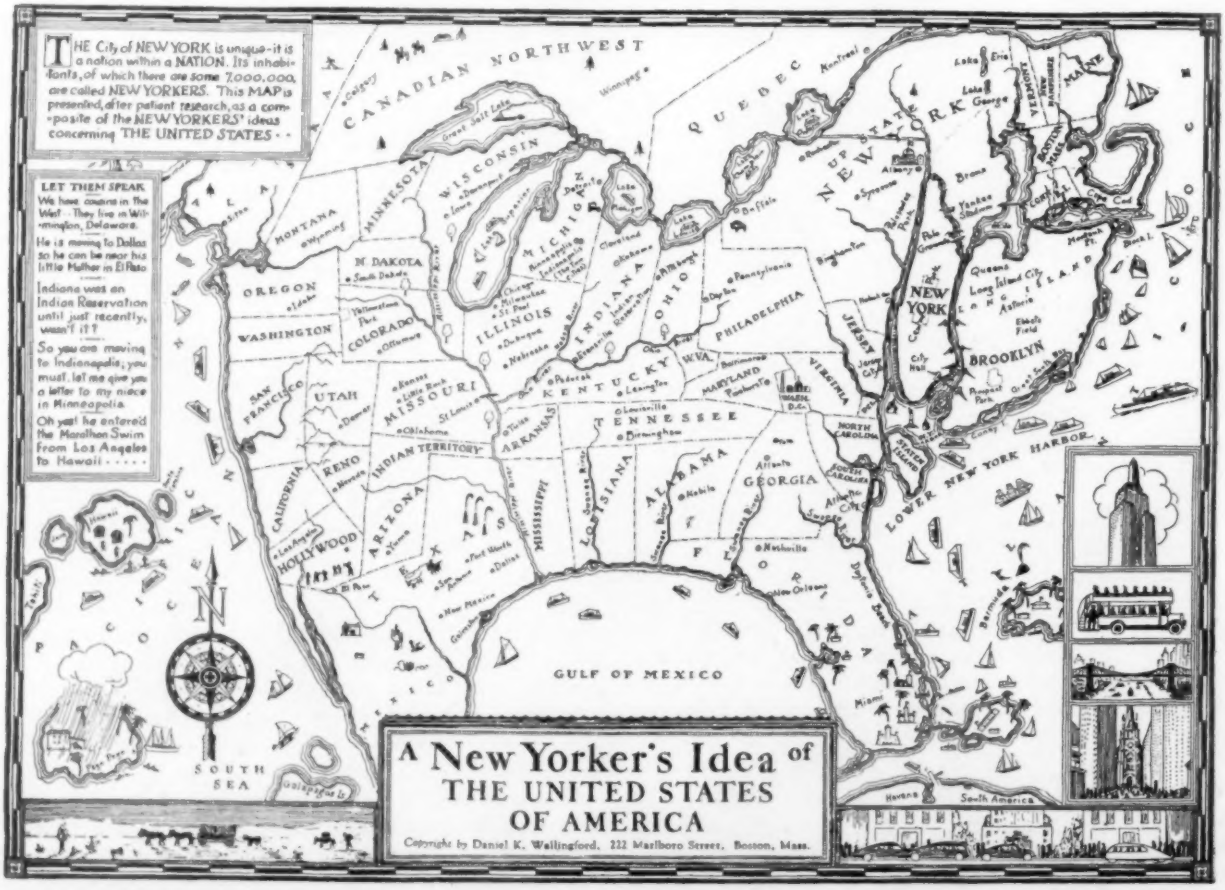
Great care must be exercised in the planting of trees, especially in the city, where appearance and health are so essential. When a 2- or 4-inch tree is to be planted, it is customary, especially in poor soil, to dig a hole 6 feet in diameter, and 3 feet deep, and fill it with good soil. If this is done, the trees will usually grow rapidly, and be more free from disease and insect pests. When there is good soil along the parkway, it is not necessary to dig such a large hole. Fertilizing with good, well-rotted manure is helpful, but the manure must be well mixed with the earth, and not allowed to come into direct contact with the roots. Barnyard manure should never be used in evergreen plantings, for it is too strong, especially if used near the roots.

Cultivation is another important item. Trees growing in poor soil, especially where it is packed, should be cultivated as deeply as possible without injuring their roots. Fertilizing the top-soil with well-rotted barnyard manure is also very beneficial. Large trees may be fertilized by digging a trench around the tree and 3 or 4 feet out from it. Trenches are then dug radiating out from the tree to the circular trench. Well-rotted manure is put in these trenches and soaks into the ground and feeds the tree. Improvement in an old tree can usually be noted in a short time through this procedure.

Control of Pests by Spraying

Trees should be watched carefully, especially in summer, to detect insect pests and fungus diseases, and as soon as any such are noticed, they should be eradicated. Spraying trees is the usual method of control. A few of the most common insect enemies of the important or generally planted trees are the tussock moth, bronze birch borer, and scale insects, especially the cottony maple scale and the European elm scale.

Trees are plants, like wheat and corn, but instead of a life of one year, they continue to beautify the area in which they grow for many years. Mature trees in the United States range in age from 40 to more than 4,000 years. With proper care and without accident, the average evergreen should have a life of well over a hundred years, while the hardwood shade varieties begin to deteriorate usually only after two hundred years of life.



For permission to reproduce this amusing map, THE AMERICAN CITY is indebted to the owner of the copyright, whose name and address appear above, and from whom prints of this map in a variety of sizes may be purchased

BUILDING THE SPOIL PILE OF BLACK DIRT WITH AUSTIN-WESTERN SCRAPERS, AND LOADING A TRUCK IN THE BACKGROUND

Black Dirt for Chicago Parks

Winter Project Will Make Possible Lawns and Shrubs on Hitherto Unfertile Areas

PLACING of 700,000 cubic yards of black dirt on new lawn areas of Chicago's park system, much of it on made land, is progressing during the winter months as part of a WPA project, the completion of which has been planned for early spring. The earth, which is subjected to rigid Government tests at both the point of origin and the point of delivery, is being laid 6 to 12 inches deep where grass is to be grown, and 21 inches deep where shrubs are to be planted. Each tree placed in these areas receives on an average of 4 cubic yards around its roots.

The earth is being laid in Calumet, Lincoln, Burnham and many smaller parks. The first three named parks contain considerable areas which were filled in either by pumping sand from the lake, or by dumping clay and rubbish, and the depositing of the black earth is one of the final touches in the process of completing the beautification program. In some cases these fills have been built out many thousand feet from the original shore line. Since WPA was undertaken to create jobs for workless men, only occasionally is machinery used in the actual spreading of the earth on the park system.

Strict Soil Specifications

The Government requirements for this black earth include that it must be natural top soil, uniformly black in color and uniformly textured, without admixture of subsoil; that it be free from roots of grass or weeds, clods, clay or any other substances harmful to plant growth; that it be loose, friable, of good tilth, and that it come from land actively cultivated within the last five years.

To insure that these conditions are met, two samples are taken from each 1,000 cubic yards at the point of origin, and four samples therefrom at the point of delivery. These are subjected to physical and chemical analyses before the yardage from which they were taken is finally accepted. In case of rejection, not only is the contractor not paid for the yardage in question, but he must remove it from the point of delivery at his own expense.

Since strata of earth are rarely of uniform thickness over any appreciable area, contractors furnishing this material have frequently found themselves unintentionally including with their black dirt, subsoils which did not meet the Government specifications, this being because the machinery they used was of a type that could not be adjusted with great precision. Steam shovels seem particularly prone to bite beyond the proper strata, according to WPA earth inspectors, because the depth of each bite is solely dependent upon the vigilance of the shovel operator, and the tendency is to dig out as much as possible at a given location before the machine is shifted. Draglines, too, must be watched carefully to make sure that they are not scooping too deeply, and various contractors depending solely on draglines have found their black earth rejected because of the inclusion of undesirable material. Elevating graders have done good work in removing the dirt, but proved unusable in wet weather because the trucks which must accompany them tend to bog down in moist earth.

Stripping with Scrapers

The Beverly Improvement Co., which furnishes earth taken from the southwest section of Chicago, has found that the most efficient, economical and rapid machine for this purpose is the self-loading scraper. Machines of this type can be adjusted to pare off a thin slice from the surface when it is necessary to remove weeds, grass, etc., and can likewise be set to remove all of a thin layer of black earth without shaving even an inch into the undesirable subsoil below it. Contractors using scrapers have likewise found it far easier to obtain desirable earth, because shaving off the top in uniform layers does not damage the property for agricultural or other purposes, as is the

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Two unskilled workers can lay Wamblu Simplified Safety Letters and Markers on the pavement of the busiest street intersections during the regular red intervals of signal lights—laying fifty feet of strip in less than one minute.

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1. Wamblu Markers have better visibility.
2. Wamblu Markers are laid without delaying traffic (Winter or Summer).
3. Wamblu Markers are made with special adhesives for each season of the year.

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New double-gum adhesive, heavier canvas and deeper impregnation of special paint make it possible to guarantee these Wamblu products for four months, one month longer than formerly.

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4. Wamblu Markers grow brighter under wear, and last for the entire traffic season, with no upkeep cost.
5. Wamblu Markers cost less, because they serve longer.
6. Wamblu Markers are laid with unskilled labor.
7. Wamblu Markers are guaranteed.

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Sizes

Wamblu Markers are furnished in 25-foot lengths, 6, 7 and 10-inch widths. Usual 30-inch white letters on black background. Larger or smaller sizes if desired; and any two color combination.

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case when shovels are used. With the self-loading scraper the black dirt can be removed from all parts of the property under contract to a central spoil pile and there loaded into trucks for hauling to the park system.

While WPA specifications allow certain tolerances in the contents of the various black earth ingredients, some contractors have thought it advisable to blend the dirt from different parts of a given area before taking it to the job, to insure that the earth as delivered will be absolutely uniform. This blending is made particularly easy because of the facility with which the self-loading scraper can deposit thin layers of dirt at any desired point. Instead of concentrating the stripping effort in one section of the field at a given time, scraper loads are gathered and hauled from all parts of the field to the spoil pile, where they are spread in layers of 2 or 3 inches.

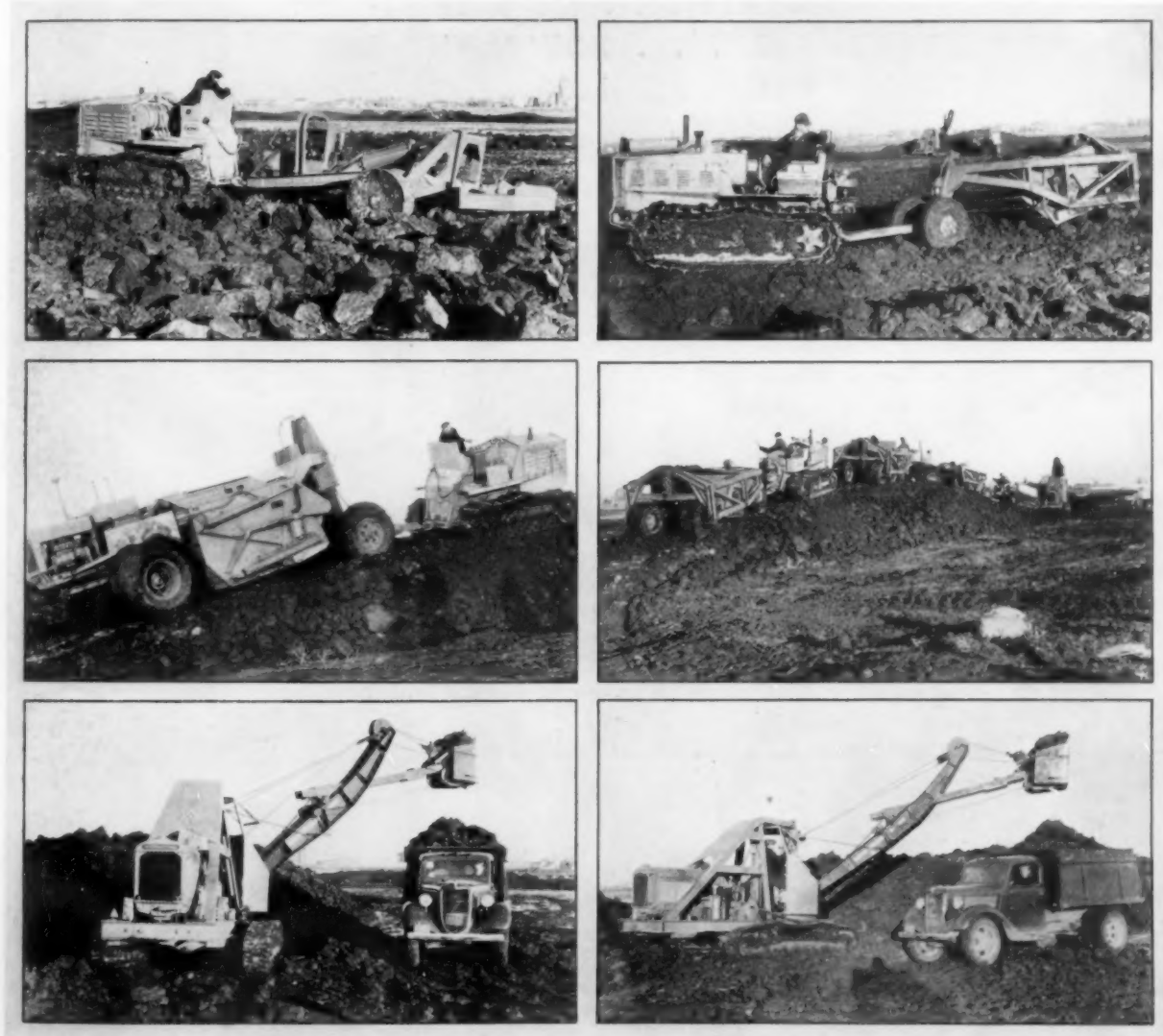
Handling Frozen Earth

Since it is imperative that the WPA project be kept going during the winter months, the directors have required the contractors furnishing black earth to maintain deliveries regardless of low temperatures. This has meant stripping frozen earth, and for this purpose it has been necessary to use rippers in connection with the self-loading scrapers.

The Beverly Improvement Co., which furnishes black earth from the southwest section of Chicago, uses for this purpose Austin-Western Giant Rippers, which are set to break the frozen ground to a depth of 6 inches, leaving the dirt in large chunks. These are picked up in Austin-Western 5-yard self-loading scrapers and deposited on the centrally located spoil heap.

Low temperatures always freeze the chunks into one large mass, so when the heap has grown to the proper size it is dynamited, a process which not only reduces the large chunks of frozen dirt to small ones, but scatters them over a considerable area. Then bulldozers push the small chunks back into a pile again, and the dirt is loaded into trucks and hauled to the park system.

Practically all the rejections of dirt that have arisen have been caused, according to WPA officials, because the contractors used at the point of origin machinery which was not readily adjustable to prevent cutting below the strata whose preliminary tests had shown them to be of the proper type.



SCENES SHOWING THE BREAKING UP, MOVING AND LOADING OF BLACK DIRT FOR HAULING TO CHICAGO PARKS

FLUSHING

Washes ALL Dirt Away

STREETS ARE CLEANER . . . MORE SANITARY AND HEALTHFUL . . . EQUIPMENT AND MAINTENANCE COSTS ARE LESS

Every community, large or small, needs to have clean, sanitary streets . . . at lowest possible cost. Therefore, it is a matter of determining *what method* of street-cleaning is *best from every standpoint*. Flushing or "washing" with *water . . . "nature's greatest cleanser"* removes ALL the dirt. Streets are clean and sanitary, helpful to health, better for modern traffic . . . and the best "advertisement" any city can have. Consider these advantages of modern, motorized flushers.—

1. Flushers cost less to buy.
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3. Flushers clean more thoroughly.
4. Flushers clean *UNDER* "Parked Cars."
5. Flushers clean entire width of street.
6. Homes, offices, stores are cleaner.
7. No "flying dust" with flushers.
8. Flushers clean more efficiently in congested business districts filled with "parked cars" and heavy traffic.
9. Flushers remove both heavy dirt and light dust.
10. Streets can be made "spotless clean" in business and residental districts.

DUSTING AND SWEEPING

always raises "flying dust" . . . a portion of which *always re-settles*, whether it be a home, an office or a street that has to be cleaned.

WASHING

with water . . . "nature's greatest cleanser" . . . prevents flying dust, gets *ALL* the dirt . . . washes "spotless clean."

A typical, modern SOUTH BEND Street-Flusher. Can be mounted on any truck or trailer chassis. For sales literature and complete information, write MUNICIPAL SUPPLY CO., South Bend, Indiana.

Cooperative Refuse Collection Shows Economies in Knoxville

New Type of Collection Unit Puts an End to the Alley Scavenger

By HAL H. HALE
City Engineer, Knoxville, Tenn.

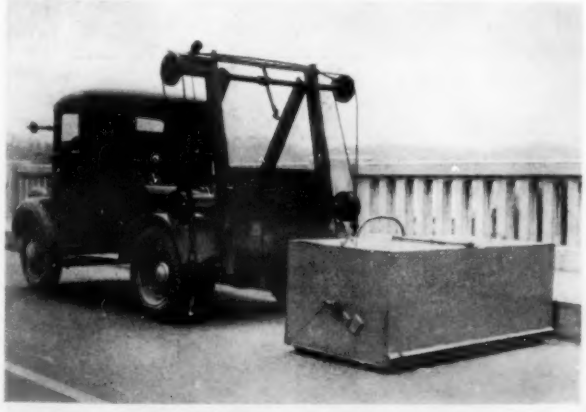
THE service departments of our cities—more, perhaps, than any other branch of municipal government—have been forced to economize and meet increased demands for service with decreasing budgets. It has therefore been incumbent upon officials in this division of municipal service to cut every corner and stretch the budget dollar to the breaking point.

For the past ten years refuse collection has been an increasing problem for Knoxville. Not even during the worst depression years did the demand or quantity lessen. In 1936 approximately 157,000 cubic yards of refuse was collected, in 1935 143,000 cubic yards, in 1934 120,000 cubic yards, and so on back. This is in the neighborhood of 12,000 cubic yards per month, and has usually required from fourteen to eighteen trucks with driver and two helpers to handle.

Alley Scavenger Problem

Another serious problem that has been much more bothersome during the depression years has been the private scavenger in the alley trash cans—the man with the sack or push-cart, pillaging through the cans, scattering as he goes, and practically uncontrollable in his scavenging. Particularly in the business districts, with its large amount of waste paper, has this been serious. No satisfactory method of controlling the problem without undue expense and greatly increased personnel appears practical.

In Knoxville, the home owner or business house is required to furnish its own refuse container, resulting, in the business district, in an alley full of trash cans, usually with lids off, and not only expensive to handle but unsightly at best.



BUCKET DROPPED FROM SKIP AND DISCONNECTED

When placed in an alley in this manner, all that remains to be done is to swing it parallel with the curb by means of a pinch bar

DISCHARGING REFUSE FROM THE BUCKET HELD OFF THE GROUND BY THE SKIP

New Collection Equipment

The problem of refuse-collection equipment has been studied for many years and constantly improved. The city of Knoxville now has in service what is believed to be an entirely new type of equipment, known as the "Dempster-Dumpster." This equipment was developed by Dempster Brothers, Inc., and originally applied to rock-moving in quarry work, where it proved to be most economical. The unit consists essentially of a short coupled truck, with hydraulic hoist, vertical lifting rack, and a bottom dump, closed top 2-yard detachable bucket. The bucket is connected and disconnected from the hoist in a unique and efficient manner and requires only one man, the driver, to operate.

The adaptation of this unit to garbage collection was an outgrowth of two needs—to clean up the alleys and lessen the scavenger troubles, and to find a more economical unit of operation in this field.

Merchants Cooperate

The procedure of operation has been, first, to secure the consent and cooperation of the merchants in a block to use this type unit. Generally they all go together and purchase one or two buckets. The bucket is located in the central part of the alley, and all carry their refuse to one bucket. In the business district, collections are made usually one to three times daily, as required. The skip truck pulls into the alley with the empty bucket. It is lowered to the pavement and disconnected. By means of a pinch bar the driver places the bucket against the build-

BUILD A BRIDGE OVER "MUD MONTH"

"Mud month" . . . the long weeks of break-up weather, when roads lose their bottoms and highway officials lose their patience! "Mud month" . . . when mired farmers meet in fervent condemnation of highway workers and all their friends! "Mud month" . . . when officials sadly survey the swales which once were roads! "Mud month" is on the way out.

More and more highway officials are building a bridge over mud month with the new low-cost calcium chloride-stabilized surfaces. They stand up through "mud month"—they are dustless in summer.

Stabilized roads and streets are built of local soil materials by local labor, so the costs are low — little more than the cost of an ordinary graveled road. You get more miles of better road at a price you can afford to pay.

Calcium chloride-stabilized roads carry the farmer to market when he wants to go, and make him the road man's best friend. Thousands of miles of stabilized roads are showing an amazing record of ruggedness under "mud month" conditions. Builders and users alike pronounce them the greatest development in road construction in years.

End "mud month" in your section with stabilized soil roads. They meet the requirements of WPA and many other federal aid projects. Write for your copy of "Low Cost Roads." This booklet tells how it is done.

CALCIUM CHLORIDE ASSOCIATION

The Columbia Alkali Corporation . . . Barberton, Ohio
The Dow Chemical Company . . . Midland, Michigan
Michigan Alkali Company . 60 E. 42nd St., New York City
Solvay Sales Corporation . 40 Rector St., New York City

CALCIUM CHLORIDE
FOR STABILIZING ROAD SURFACES

ing and parallel to the alley, where it occupies no more alley space than the average garbage can. This placement requires only a minute's time, and the bucket is ready for use. The truck moves on to another bucket, picks it up and carries it to the dump and returns. This has been whole-heartedly received in Knoxville, and has resulted in cleaner alleys, freedom from a large number of cans, less scavenger trouble, and the loading of the garbage by the property owner instead of by the city. By having the garbage loaded by the property owner, only the driver is required on a truck, whereas previously a driver and two men were required to handle the loading and hauling. The efficiency of a unit of this type increases with the number of containers used, up to the point where the truck has no idle time. At present 18 buckets of this type are in service, which seems to be about all one truck can handle in the business area. Each piece, or unit, of equipment of this type is highly durable. The bucket is of welded construction, with an estimated life or not less than five years, which makes them much cheaper to use than the old-type, easily deformed, fragile container.

Costs

A tabulation of cost of collection is shown below, and a comparison of costs to operate the "Dempster-Dumpster" as against the old type is made.

SIX-DAY OPERATION

Details	*Dempster-Dumpster*	*Regular Truck*
Capacity of one load (cubic yards) ..	2	8
Average loads hauled per day	20	6
Average yards hauled per day.....	40	48
Total yards hauled in 6 days.....	240	288
Hours per day worked	9	9
Cost of labor	$15.00	$45.00
Gallons of gasoline used	46	51
Quarts of cylinder oil used	6	8
Cost of gasoline	$5.06	$5.61
Cost of cylinder oil	.42	.56
Total cost of operations for 6 days.....	$20.48	$51.17
Cost per yard of garbage hauled	8.5c	17.76c

Patents on this equipment are controlled by Dempster Brothers, Inc., of Knoxville. Operation as shown in the above table shows this to be the most economical unit we have yet tried, and it appears to be well suited to refuse collection service.

$9.00 for Advertising the Water Works

By NED ATKINSON
Superintendent of Water Works, Vandalia, Ill.

IT seems strange indeed that a municipally owned water purification plant should go on record as paying for advertising, since it has only one product to sell and no competition to fight, but that is what happened in Vandalia, Ill., a city of 4,500 people.

About six years ago I visited the High School, and each year since then I have had some very interesting sessions with the chemistry and science classes. A trip to the plant by these classes is now included in their year's work.

Those Nine Dollars

But as to advertising—last year I went to the City Council and asked for $9.00 to be spent in advertising our water plant. At first it sounded foolish, for no plant in the state of Illinois had ever spent money on advertising, but the appropriation was made and got the most returns per dollar of any advertising appropriation I know.

I then went to our school of the 6th, 7th, and 8th grades and invited the teachers to bring the children down for a trip through the plant. They accepted, and groups of 30 to 35 at a time were brought down, supervised by a teacher.

On arriving at the plant, the plan of the competition was explained and each child was asked to write a story on the subject, "Safe Water, How and Why?" and was told that cash prizes would be given, $2.00 for the best paper and $1.00 for second in each of the three grades.

The talk on the subject to be written on took up about fifteen minutes, and then the children were taken through the plant, and every operation was explained. After each step of the explanation, they were given an opportunity to ask questions.

The amusing thing about the work was the number of citizens, some having been here for years and never having seen the water plant, who came down just because they had children in these grades, trying to win a prize. Some of the children came back to the plant to ask questions, and several brought their parents with them.

After giving them plenty of time, I collected the papers and graded them down to about ten from each school grade, and C. W. Klassen, Chief Sanitary Engineer of the State Department of Public Health, did the final grading and selected the winners. When the papers came back from Springfield, each paper showed that it had been carefully read, for notations were made all through them, and the winners, five girls and one boy, received from Mr. Klassen a personally written letter of congratulation and thanks for taking so much interest in the water works and the contest.

It was interesting to note from the papers the careful attention that had been given. Some of the papers stressed these points:

"No matter how muddy or contaminated the raw water is, it can be cleaned and made safe."

"A lot of credit is due the men that guard our health by giving us pure water to drink."

"The water used for fighting fires is pure and clean."

"As there are no cross-connections, nothing but treated water can get in the mains that supply the town."

"Even though the filters clean the water, it must be treated with chlorine gas to make it safe."

I spent this $9.00, and for it I have added 250 "live wires" to the list of boosters for our plant and operating personnel. In addition to the children, a great number of parents who had never visited the plant now have a fair idea of the responsibility that any plant operator has. I really believe it was money well spent.

What do you think?

No need to scrap your one-way equipment . . . simply add to it!

18 type transmitter, power unit and antenna installed in car.

MANY cities and towns are still further speeding up their radio police work. They're modernizing their communication systems — by making them *2-way!*

Follow their lead! You can continue to use your present equipment for broadcasting alarms. Simply add Western Electric ultra-high frequency transmitters in your cars and a receiver at headquarters. Result: a thoroughly modern 2-way system at moderate cost.

Transmitting equipment for cars is compact, easy to operate, dependable. It enables headquarters and patrols to cooperate far more efficiently — leads to quick arrests.

For full details: Graybar Electric Co., Graybar Building, New York.

Western Electric

Distributed by GRAYBAR Electric Co. In Canada: Northern Electric Co., Ltd.

POLICE RADIO TELEPHONE EQUIPMENT

Towing, Fire and Cleaning Service on the Trans-Bay Bridge

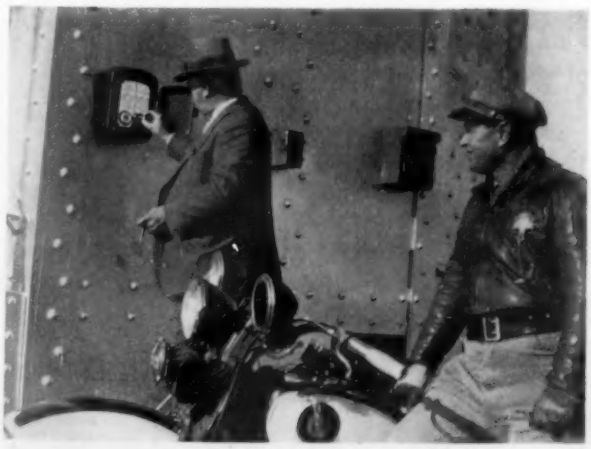
Adequate Equipment Protects Traffic on New Structure Between San Francisco and Oakland

THE maintenance of the roadway and protection of motor traffic on the newly opened San Francisco-Oakland Bridge is a problem the equal of that of many of our fair-sized cities. The cleaning of six lanes of pavement on the upper deck and three lanes on the lower deck of the 8¼-mile structure is a real job. Towing is necessary for disabled vehicles, and fire service is essential.

The Autocall System

By means of 32-Autocalls installed throughout the length of the bridge and approaches, motorists crossing the Bay Bridge may summon either the two trucks or the fire apparatus by merely breaking the glass in one of the Autocall stations which are installed on the hand railings on either side of the bridge and on the bridge towers. If a tow car is desired, the motorist breaks the glass in the tow car signal; and if he needs a fire truck, he breaks the glass in the fire-alarm signal.

The service equipment is parked in a special fireproof fire station on Yerba Buena Island and in a special garage and machine shop built on to the Administration Building at the Toll Plaza on the sand fill 3,500 feet east of the Oakland end of the bridge. The service equipment consists of an Elgin street sweeper, a Four-Wheel-Drive heavy-duty tow truck, two General Motors tow trucks, American LaFrance fire apparatus, a General Motors tower truck, Spear Wells pavement repair apparatus, and two Ford V-8 trucks.



BREAKING THE GLASS IN THE AUTOCALL FIRE-ALARM SYSTEM ON THE TRANS-BAY BRIDGE TO CALL THE EMERGENCY FIRE EQUIPMENT

THE TRANS-BAY BRIDGE GARAGE, SHOWING THE TOW TRUCK, THE PICK-UP SWEEPER, AND THE ASPHALT KETTLE FOR BRIDGE MAINTENANCE

Cleaning the Roadway

The Elgin pick-up sweeper is specially equipped with ten lights to increase the efficiency of night operation. The three wheels have Goodrich Silvertown 26-8 tires, and it carries a 30-gallon water tank. A spray of water is delivered to the road surface in front of the broom to settle the dust. The gutter-broom digs the dirt out of the gutter and moves it to the heavy broom, which delivers it to the belt for disposal in the hopper at the front of the machine. This machine can do a complete turn in a 30-foot turn and have 2 feet to spare. The Model-20 machine used on the Trans-Bay Bridge has double gutterbrooms, so that it can clean both gutters on one-way traffic approaches and still continue along with the traffic. It is covering approximately 36 miles every 24 hours, being operated day and night.

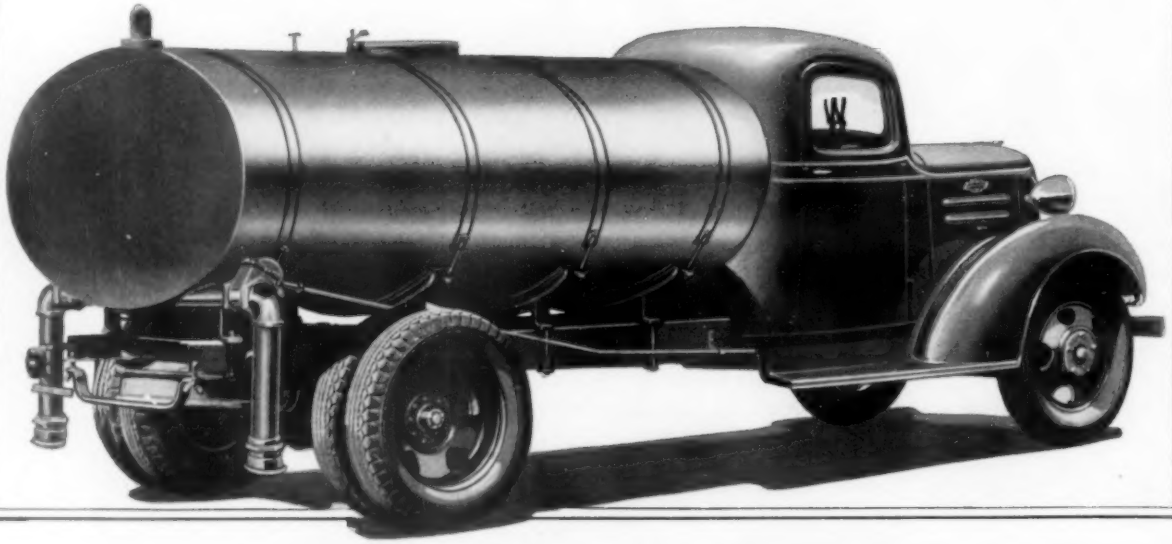
Towing Service

The tow trucks are equipped with tow ropes, wrecking equipment and several chemical fire extinguishers. The Four-Wheel-Drive truck is used mainly for handling heavy trucks and buses, and the two GMC tow trucks for lighter automotive equipment. The GMC trucks are equipped with U. S. Royal tires 7-00-20 dual at the rear, and carry three different types of chemical fire extinguishers, including a Foamite hand extinguisher. The three tow trucks were equipped with the towing devices at the Headquarters Shops of the California Highway Commission at Sacramento, under the direction of R. H. Stalnaker, Equipment Engineer.

CHEVROLET

MOTOR UNITS FOR MUNICIPAL REQUIREMENTS

STREET CLEANING and SPRINKLING

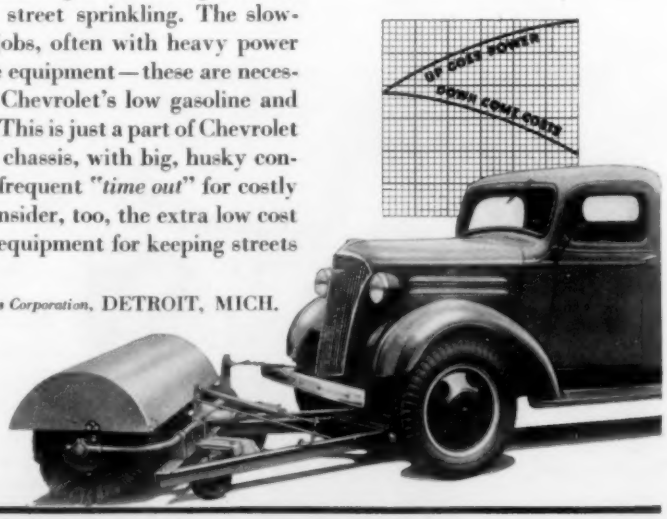


Chevrolet-Powered Equipment Brings Big Gas and Oil Savings to These Jobs

CHEVROLET
FOR ECONOMICAL TRANSPORTATION

The Chevrolet 1½-ton truck chassis brings outstanding low-cost operation to street cleaning and street sprinkling. The slow-speed travel employed on these jobs, often with heavy power requirements; the steady, continuous use of the equipment—these are necessary but costly municipal functions in which Chevrolet's low gasoline and oil consumption saves many dollars of expense! This is just a part of Chevrolet economy on this type of work. The Chevrolet chassis, with big, husky construction throughout, *stays* on the job *without* frequent "*time out*" for costly repairs *plus* the expense of idle manpower. Consider, too, the extra low cost of the Chevrolet truck chassis, when selecting equipment for keeping streets clear and fit for modern motor travel.

CHEVROLET MOTOR DIVISION, *General Motors Sales Corporation*, DETROIT, MICH.



See your Chevrolet dealer for complete information on Chevrolet trucks and passenger cars for the following state and municipal transport uses: POLICE SCOUT CARS · POLICE PATROL WAGONS · HIGHWAY CONSTRUCTION AND MAINTENANCE · GARBAGE COLLECTION · COMPRESSOR UNITS · PARK AND BOULEVARD SERVICE

"MORE POWER per gallon LOWER COST per load!"

Fire Equipment

The fire-fighting equipment consists of an American-LaFrance truck with a Byron Jackson pump of 150-gpm capacity mounted on a GMC chassis equipped with U. S. Royal 8-25-20 tires with duals at the rear. A 300-gallon tank of water is carried by the apparatus, with standard fire hose. Water is delivered by the Byron Jackson pump, running at 2,200 rpm and driven by the truck motor, which runs at 1,700 rpm. The chemical equipment on the truck includes two 40-gallon Foamite tanks and 300 feet of ¾-inch hose for use with the Foamite. In the event that the two 40-gallon tanks are used up, the Foamite generator is recharged, there being eight 50-pound buckets of the chemical carried on the trucks for this service. Numerous types of hand chemical fire extinguishers are also carried by the fire apparatus.

Lighting Maintenance

The GMC tower truck is used for the maintenance of the General Electric sodium vapor lamps which light the bridge. The tower platform can be raised 24 feet above the roadway, and extends out 10 feet to the side. The extension at the top turns around completely. There is a slot cut in the end of the extension platform so that it can extend around the pole, and then the floor and railing are replaced so that the service man can walk completely around any one of the 1,074 sodium vapor lamps when he is servicing them. This arrangement allows the truck driver to park the truck alongside the curb in either direction with the traffic, and to turn the platform so that it extends out beyond the lamp standard for relamping or for adjustment of the luminaire mechanism.

The vertical extension is effected by telescoping the various sections of the tower, permitting it to be collapsed to the height of an ordinary vehicle which will clear all road obstructions.

The tower truck is also equipped with posts which permit the driver to place the body of the truck directly on the axle instead of having it supported by the springs. This eliminates side-sway when the service man gets off the center of gravity of the truck with the platform extended.

The body of the truck is also equipped with framework for carrying tools and equipment and a liberal supply of built-in cabinets for carrying lamp supplies.

The Gar Wood hoist for raising and lowering the truck tower is controlled from the cab. The top platform is extended by hand from the top of the truck. The tower truck was equipped by the California Division of Highways Headquarters Shop at Sacramento.

Recreational Development of a River Valley

DEFINITE and far-reaching objectives for the restoring of lost beauties and uses of the Huron River valley in Michigan were agreed upon and announced by a determined group of people representing all sections and interests of the valley at Ann Arbor March 5.

The Huron River valley, because of its geographic location and the variety and extent of its resources, offers exceptional opportunities for development for the use and enjoyment of a large urban and rural population and as a demonstration of the potentialities of small river systems elsewhere in Michigan and in other parts of the country. Such development calls for the formulation of a comprehensive plan for the full and coordinated use of the water, forest, wildlife, scenic, and other recreational facilities of the valley, including the construction of a parkway and the publication of a valley guide, and would be facilitated by the adoption by the state of a modern water code.

Planners, engineers, industrialists, foresters, geographers and representatives of the state bureaus pledged their cooperation at the March 5 meeting to make available to the people in the congested section of southeastern Michigan a river cleared for boating, improved for fishing, relieved of pollution, made beautiful and supplied with outing grounds along its banks. It was pointed out that the heavy-tax-paying population in this metropolitan drainage basin should demand and take part in development of the perfect setting at their very doors.

As definite steps toward the adoption and execution of a program of this sort, the Conference, of which Samuel T. Dana is Chairman, favors the following action:

1. That the Commission on Highways and Park Trustees in each of the counties, the State Highway Commissioner, and the mayors of the municipalities involved, be asked to improve so far as possible the sections of the valley within their jurisdiction, and to cooperate with each other in providing a loop parkway through the Huron and Clinton valleys.

2. That the State Department of Conservation be asked to cooperate in making the Huron a model valley through the full development of the plant, animal, scenic, and other resources that come within the range of its responsibilities.

3. That the Governor be asked to arrange, either through the State Planning Commission or a specially appointed Commission, for the preparation for consideration by the Legislature of a water code adapted to modern conditions and designed to assure the best possible use of the waters of the state.

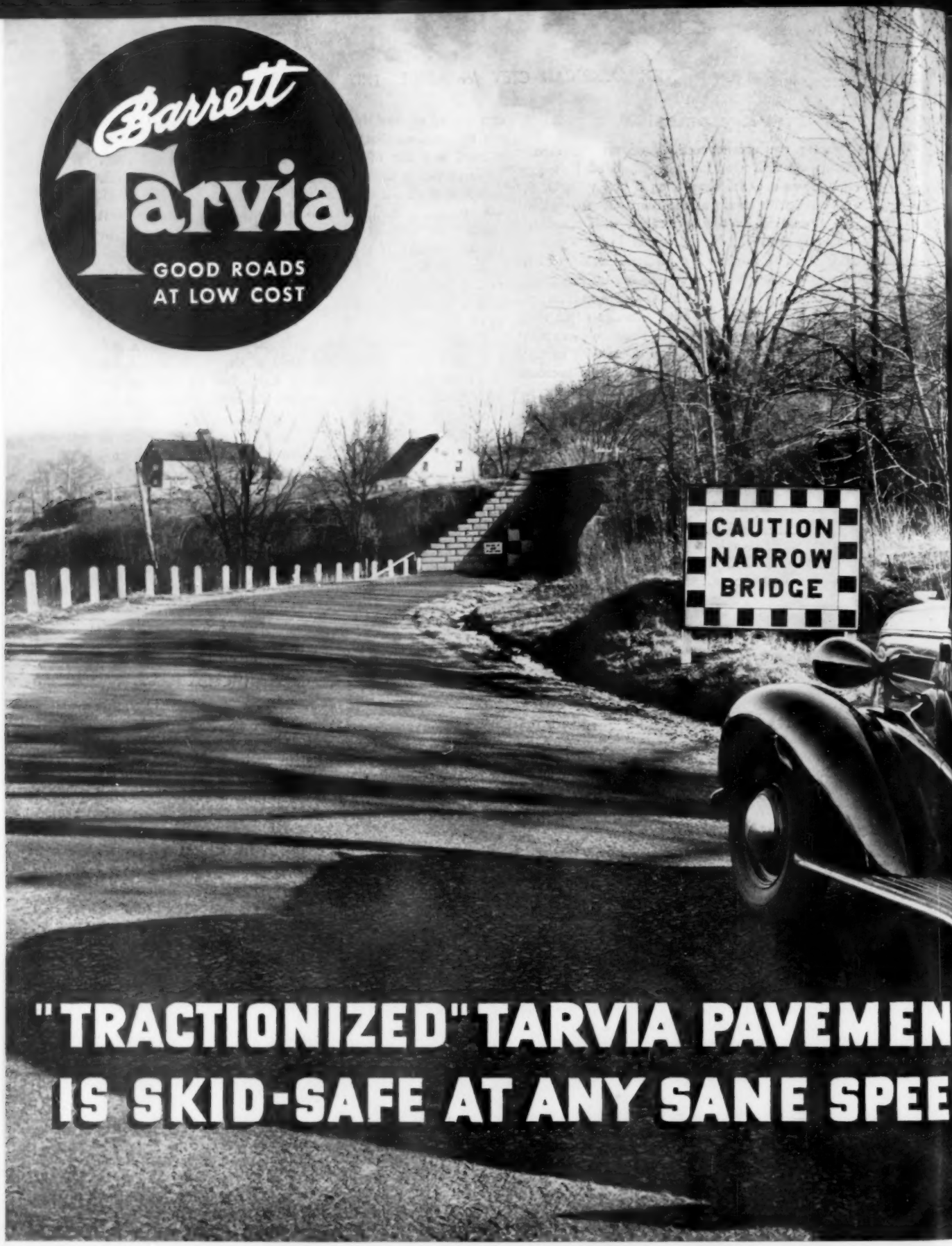
4. That the State Planning Commission be asked to recognize the unit development of individual river valleys as an important element in land-use planning, and to cooperate in every way practicable in the development of the Huron valley.

5. That the cities of Ypsilanti and Flat Rock be urged to provide sanitary sewage disposal at the earliest possible moment.

6. That the members of the Conference be requested to report back to the organizations which they represent on the proceedings and recommendations of the Conference, and to urge their cooperation in the carrying-out of these recommendations.

7. That the Chairman of the Conference be requested to appoint at this time a Huron Valley Committee of seven members, with power to effect such subsequent changes in composition or number as may seem to them wise, for the purpose of formulating and forwarding the execution of a coordinated plan for the development, improvement, and utilization of the resources of the valley in the best interests of their owners and the general public.

SAMUEL T. DANA, Chairman
JOHN Z. GAULT; JOSEPH C. HOOPER;
HENRY E. RIGGS; DONALD D. SMITH



THE BARRETT COMPANY New York Chicago Philadelphia Birmingham St. Louis Rochester Toledo Milwaukee Detroit Baltimore Youngstown Cincinnati Buffalo Minneapolis Syracuse Bethlehem Providence Cleveland Hartford Portland, Me. Lebanon Columbus Boston Norwood, N. Y. In Canada: THE BARRETT COMPANY, LTD. Montreal Toronto Winnipeg Vancouver

During April we hope you will remember to mention THE AMERICAN CITY.

Water-Works Improvement Continues

Waterloo's New Pumping Station the Most Recent Addition to System That Brought First Best Fire Insurance Rating to Iowa

TO be the first city in any state to have the lowest fire insurance rating awarded is an honor, and that honor fell to the lot of Waterloo, Iowa, only a few years ago. Since that time two other Iowa cities have also received the benefits to the property owners in reduced fire insurance premiums. The low fire insurance classification has not stopped Waterloo in its program to furnish the best possible water supply for its citizens, and only a few months ago the city completed a notable new pumping station that is a real addition to the civic architecture of the community and a great protection to the heart of the system, the high-pressure pumps.

The old pumping station had brick walls and a wooden roof. Inquiries showed that the premium on fire insurance of the pumping station alone with the change from this old hazardous construction to modern fireproof construction would be reduced from $1.03 to 39 cents. When it came time to demolish the old pumping-station building to make way for the new housing for the pumps, the walls began to bulge and had to be reinforced quickly to prevent collapse. Further, it was found that many of the wooden beams in the roof structure had cracked badly and might readily have caused a serious failure if wind or snow load had been excessive at any time.

The old pumping station was built in 1901, and the contracts for the construction of the new station were let August 15, 1935. The first work was the construction of a temporary enclosure around the boilers and another around the pumps. These were built of 12-inch tongue-and-groove lumber with asbestos paper on the outside. By Labor Day, 1935, the old pumping station had been completely demolished, and on November 10, 1935, the walls were up and the roof on the new building. The building is of buff brick with Bedford limestone trim.

The old concrete stack, built by the Weber Chimney Co., rests on a 20 x 20-foot foundation and is to be used with the new structure. It is 127 feet high, 9 feet 9 inches outside diameter at the base, and 5 feet 1 inch inside diameter. At the top it is 5 feet 8 inches outside diameter and 5 feet inside diameter. The stack is to be hand-rubbed and then painted buff to match the building. A special non-hardening paint known as Arco Dum Dum Masonoc paint, made by the Arco Co., Cleveland, Ohio, is being used. It requires but one coat.

The cost of the new pumping-plant building was $50,000, and the new tile floor, lighting and the refinishing of the stack cost $28,000. This work was financed entirely by water-works funds without recourse to Federal financing through loans or grants.

Waterloo is protected from an immediate water shortage by a storage reservoir of 7-mg capacity within one block of the geographical center of the city. The concrete reservoir, which is covered, extends 12 feet underground and 6 feet above ground. The reservoir is divided into five sections, so that any part can be cut out for repairs or cleaning. Access to the sections is through manholes in the concrete top.

The first section or reservoir was constructed on the site in 1910 and was of 2-mg capacity. In 1911 the Water Department offices were built on top of this section because of its accessibility to the business section of the city. In 1922 two units of 3-mg capacity were added. In 1932 another unit of 2-mg was added on the west side of the Department garage which had been constructed previously in the center of the south side of the water-works property. At the extreme west side of the property is the group of eight aerators, four for the water from the deep wells, and four for the water from the shallow wells.

The deep wells which were the original source of water for the growing city are scattered over a considerable area. The first is located one block from the reservoirs and is 1,387 feet deep, 20 inches in diameter at the top, and 12 inches diameter at the bottom. It gives 1 mg daily and is pumped by an American turbine pump. The other deep well still in service is 4½ blocks away and has a top diameter of 20 inches and a bottom diameter of 8 inches, and is 1,380 feet deep. It is pumped by a similar pump. St. Peters sand is struck at 860 feet in this section, and Jordan water-bearing sand at the bottom. This well also produces 1 mg daily.

The Water Department owns 40 acres of ground about 2½ miles from the reservoir and pumping station. On this ground are located at present three gravel wells put down by the Thorpe Well Co., of Des Moines, Iowa. The wells are of the gravel wall type and vary in depth from 85 to 90 feet. The gravel wall about the wells is about 8 feet thick, and each well delivers 2½ mgd and has not pumped sand at any time. An interesting item on the maintenance side of the gravel-wall wells is the installation of a pair of caps in the top of the casing of the wells through which gravel can be added in case the gravel-wall sinks. These caps were installed in 1932 and have never been used, since there has been no sand pumped which would be the cause of the gravel sinking in the wall. The flow line of the wells is normally 16 feet below ground level and the drawdown during maximum pumping is about 15 feet.

Each of the shallow wells is pumped by an American turbine pump, all of which are interchangeable, and the Department carries a spare so that a change can be made immediately if any trouble occurs. The maximum pumpage of recent years for domestic and industrial use was 6 mg on July 14, 1936, the previous record having been 5.4 mg. On July 15, 1936, however, the pumpage was 7 mg because a 1-mg swimming pool that had just been completed was filled during the height of the heat wave of mid-July.

The individual wells deliver water to a booster station located at the center of the well area or direct to the reservoir through a cast iron line of 16-inch Class C pipe. The

MUNICIPALITIES

THAT WATCH THEIR TRUCKING COSTS SAY:

"FORD ENGINE AND PARTS EXCHANGE PLAN CUTS MAINTENANCE EXPENSE"

RECONDITIONED PARTS AVAILABLE AT LOW COST

Carburetor Assemblies	Distributor Assemblies
Fuel Pump Assemblies	Clutch Pressure Plate Assemblies
Generator Assemblies	Clutch Disc Assemblies
Generator Armatures	Brake Shoe Assemblies

Shock Absorbers for Commercial Cars Only

Low gas and oil costs are only a part of Ford V-8 Truck and Commercial Car economy. Maintenance expense is also low because sound design, quality materials and precision manufacture make trips to the repair shop few and far between.

When parts replacements do become necessary, the cost is small. For example, after tens of thousands of miles of service the V-8 engine can be exchanged for a factory-reconditioned engine at a cost much lower than an ordinary engine overhaul. This exchange can be made in just a few hours, reducing the idle time of the unit. This plan restores original performance and greatly lengthens the useful life of the entire vehicle. In addition to the engine, many other factory-reconditioned parts are available at low cost.

Before you buy any new truck this year, ask your Ford dealer for details about this money-saving plan. Set a date for an "on-the-job" test of a Ford V-8 Truck or Commercial Car under your own operating conditions.

Ford

Convenient, economical terms through the Authorized Ford Finance Plans of the Universal Credit Company

FORD V-8 TRUCKS *and commercial cars*

booster station delivers direct to the reservoirs, or to four 12-inch pipes of the gridiron system and one 15-inch line which runs within one block of the center of the city. The booster station is equipped with a 6-mg American turbine pump driven by a 200-hp G-E motor. The delivery is metered with a Republic flow meter. This pump can be used to send 6 mg against an 80-foot head into the city, cutting out the city pumping station entirely, thus providing an auxiliary pumping station for fire protection. The booster station has a Humphrey gas unit heater which heats the station in winter, and in summer circulates the air without heating, and makes a 10-degree difference in temperature as well as preventing sweating of the pipes and the pump.

As a recent part of its improvement program, the city has constructed a 16-mile loop of 12-inch pipe around the city, which has put an end to all dead-ends on the edge of town, although there still are a number of dead-ends within the city which are gradually being connected.

City Pumping-Station Equipment

The city pumping station is a steam station with a single electric pump. Coal for the plant is received on a siding alongside the plant and is unloaded with a vacuum system pipe which is run into the car and the buckwheat coal lifted to an intermediate hopper at the top of the building holding about 35 tons. The vacuum system was installed by the Stephens-Adamson Co., and the blower for operating it is a Connersville unit. From the intermediate hopper the coal runs by gravity to the coal bunkers, which hold 6 carloads, or about 300 tons.

The bunker is a movable hopper which runs back and forth and across the face of the three boilers feeding them. They are Murray Iron Works units of 150 boiler horsepower each. The stokers are Westinghouse single retort underfeed stokers. Only one boiler is used for the station in summer, but in winter two are used because the plant furnishes heat to several buildings in the vicinity. The income from the heating load pays all but about $300 to $900 of the annual fuel cost.

The pumps installed include an old Barr steam pump of 3-mg capacity, installed in 1901; two Snow steam pumps of 4-mg capacity, each installed in 1911, and one American centrifugal of 6½-mg capacity driven by a Westinghouse 350-hp motor. On the same floor with the pumps is the chlorinator room, where duplicate Wallace & Tiernan vacuum type chlorinators are installed, with a Toledo springless platform scale for the chlorine cylinders. The motif of the station is generally in the Century of Progress idea both inside and outside.

The engineers' office and the laboratory are located on a balcony in one corner of the pump room, with complete sound insulation. In looking down on the pumps a strange impression is secured, for the water end of the pumps is very heavily insulated with magnesia covering which is kept in the whitest condition. This is used because the water is always cold and the sweating of the pumps in the steam station at any time of the year causes a veritable stream of water on the floors. This is completely overcome by the heavy insulation.

The pumps deliver direct to the system, on which a pressure of 78 pounds is maintained. During fires this is raised to 90 pounds. The output of the station is measured by a Republic flow meter on the suction line of the steam pumps and another on the centrifugal pump. The meter location was chosen because there was no other place for the meter; the front of the station is completely filled with the gates for the various pumps and the valves and steam lines for the central heating installation. As there is a slight head on the suction line of the pumps, there is no reason for not placing the meter at that location. Each pump has a gate-valve on the suction and discharge sides as well as a check valve on the discharge side. The head on the suction side is about 8 feet.

The late George E. Shoemaker had been Superintendent of the Water Department for 33 years, prior to his sudden death in February, having previously served the water company whose plant was purchased by the city as the basis of the present improved system.

1936 Taxes Reduced 29.6 Per Cent

By ARTHUR J. SPURGEON
Auditor, Clinton County, Frankfort, Indiana

MODERN methods and economies have effected a reduction of 29.6 per cent in the total taxes levied in Clinton County, Ind., and the amount of delinquency has been reduced 62.5 per cent. There are 35,000 property parcels.

The county treasurer used the tax duplicate to prepare the tax receipts and required six weeks. The tax statements and receipts were filed awaiting the personal appearance of the taxpayer or a request by mail for the statement. The first and only notice the taxpayer received was a statement to the effect that his taxes were delinquent, showing the added penalty and costs.

Delinquent taxes were from 8 per cent to 15 per cent of the total assessed taxes. The delinquency, averaged over a six-year period, was $45,634.84 yearly.

Beginning in 1936, a new and modern procedure was put into use. The system was built around the mechanical name and data writing features of the Addressograph and the calculation and posting of variable data as accomplished by the Sundstrand accounting machines.

Equipment was selected on the basis of speed, legibility and versatility. Besides the mechanical writing of tax assessment and collection records, it was found to be desirable to handle other work associated with Old Age Assistance Warrants and Voters' Registration which came under the supervision of the county officers.

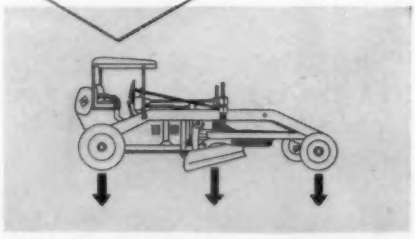
Real-Estate Assessment Record Cards

One of the first records is the Real Estate Assessment Record Card made for each taxable parcel. This card shows the chain of title, description of real estate, assessed values of land and improvements, total assessed value, exemption, and reason for any change in value, for a 20-year period. The as-

BLADE PRESSURE *makes the difference*

Smooth, even work by a motor grader is the result of EFFECTIVE blade pressure. Because of BALANCED DESIGN ... the Allis-Chalmers Speed Patrol converts more pounds of its total weight into blade pressure than any other motor grader.

One reason is the long blade base—which is made possible by extra long wheel base. Locating the moldboard farther back from the front axle puts a greater percentage of the patrol's weight into the blade—assuring smoother operation and more effective work. Correct location of the engine is another important factor ... the Speed Patrol's engine weight is between the wheels where it can best be converted into effective blade pressure and traction. More front-end weight means smoother maintenance—and prevents side-slipping on heavy cuts. Effective blade pressure DOES make a difference! Investigate now!

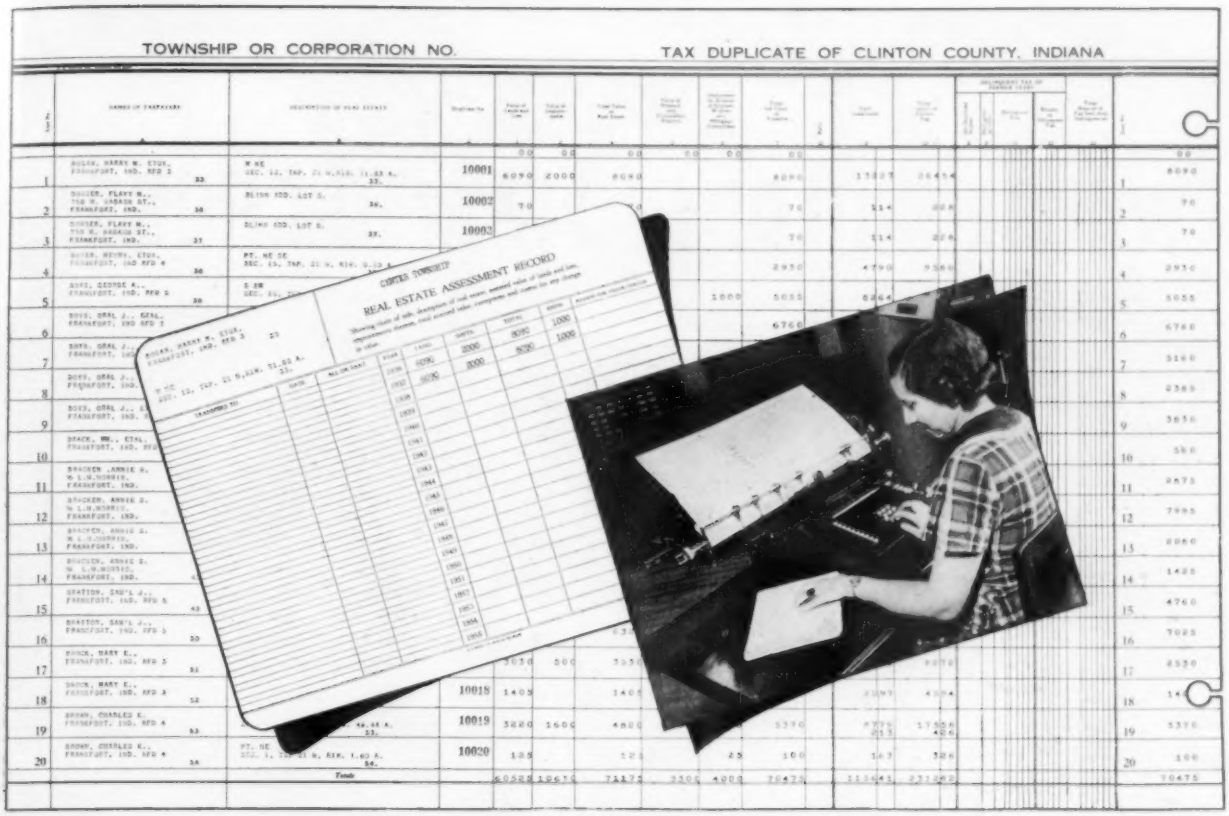


ALLIS-CHALMERS SPEED PATROLS CONVERT A HIGHER PERCENTAGE OF THEIR WEIGHT INTO BLADE PRESSURE THAN ANY OTHER MOTOR GRADERS.

SINGLE OR TANDEM DRIVE ... NO. 42 AND NO. 54 SIZES ... GASOLINE, DISTILLATE, DIESEL FUEL

ALLIS-CHALMERS SPEED PATROLS

TRACTOR DIVISION—MILWAUKEE, U. S. A.



ITEMS IN THE NEW TAX PROCEDURE IN CLINTON COUNTY, INDIANA

sessed values of land and improvements, total assessed value, and exemption, if any, are inserted on the card with a Sundstrand accounting machine.

The land value is first entered, followed by the value of the improvements, after which the machine automatically prints a total of both items. The entry is completed by writing the amount of exemption, if any. Incidental to this operation, the machine accumulates in separate registers, land values, improvement values, and exemption amounts, for proof purposes. Previous to the adoption of this record it was necessay to refer to five books to obtain the same information over a 20-year period. These assessment record cards are filed in the auditor's office.

Should a change in ownership occur, a sticker is pasted on the face of the card over the original owner's name and property description.

The real-property tax duplicate is prepared from the same Addressograph plates that were used in imprinting the payers' names, etc., on the real-estate assessment cards. An entire page is listed with 20 separate items in 30 seconds. The accounting machine is then used to insert the value of lands and lots, the value of improvements, total value of real estate, deduction on account of soldiers, widows and mortgage exemptions, and the total net value of taxables for each parcel of property. This information is taken from the assessment cards. The total value of real estate and the total net value of taxables for each parcel are automatically computed by the machine, as is the amount of each installment and the total amount of current tax.

A unique feature of the machine is the automatic multiplying mechanism. The tax rate is set on the control plate of this mechanism and thereafter all assessed valuations are automatically multiplied by the given rate. The mechanism also not only automatically points off the proper number of decimals in the answer, but will, if the answer contains a decimal representing a half-cent or more, automatically increase the amount to the next cent, or if less than a half-cent will decrease the amount to the next lower cent. On reaching the end of a tax duplicate sheet, the machine automatically prints sub-totals of all columns in which entries have been made. These sub-totals are again automatically printed at the top of the next sheet.

The work done by the machine is at all times completely visible, and the functioning of the machine is so thoroughly automatic that a person unaccustomed to office machinery can, in a few minutes, learn to control its operation.

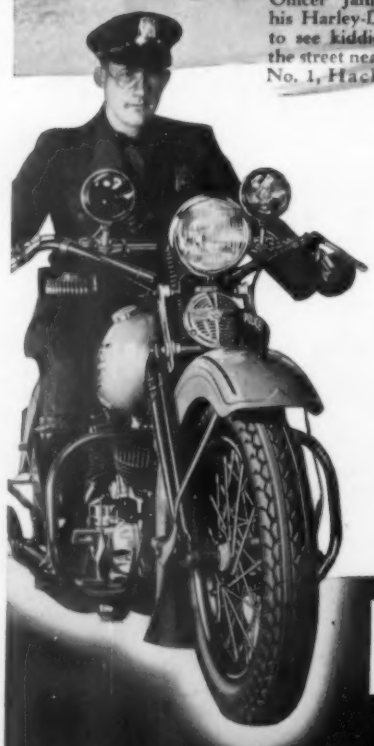
Tax Statements and Receipts

After the preparation of the tax duplicate books, the county treasurer prepares the tax statements and receipts with an original and four carbon copies (fanfold form with one-time carbon).

The original copy of the statement is mailed to the taxpayer about thirty days before the closing of the tax-paying period. The carbon copies constitute the taxpayer's receipts and treasurer's stubs for both the spring and fall collections. With this plan the taxpayer knows what the amount of his taxes is, and can make payment by mail or in person. Statements and receipts are prepared in a few days' time by regular employees, along with their other duties, as compared with six weeks' time with additional help previously required. When payment is received, the switch tab on the corresponding metal plate is switched to the "paid" position. After the close of the tax-collection period all plates having the switch tab in the original "unpaid" position represent the delinquents in the list.

are safe
WHERE CHILDREN ~~FEAR~~ TO CROSS!

Officer James Peroni and his Harley-Davidson, ready to see kiddies safely across the street near Public School No. 1, Hackensack, N. J.



MAKING crossings safe for children is another of the ADDED MEASURES OF SERVICE in traffic work made possible by Harley-Davidson Police Motorcyles. Seemingly an unimportant routine job—yet how priceless if one child's death is PREVENTED! . . . The new 1937 Harley-Davidsons —with their flexibility, dependability, efficiency, and wide range of economical service — should have an important place in YOUR 1937 Program of Accident Prevention.

A phone call to your nearby Harley-Davidson Dealer NOW will bring a new 1937 model for your inspection. Or write us for literature.

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HARLEY-DAVIDSON
The Police Motorcycle

Public Housing and Taxes

By HOWARD A. GRAY
Director, Housing Division, Public Works Administration

MANY indications point to the possible enactment in this Congressional session of a law to establish a long-term slum clearance and low-rent housing program. The President has expressed his interest, eight bills have been introduced as of March 15, and most political forecasters take it for granted that some program will be authorized.

In the 51 projects of the PWA Housing Division and the projects of the Suburban Resettlement Division of the Resettlement Administration we have precedents for the actual projects to be built under this program. Its probable form is already known. It will be decentralized, developing under the aegis of local legally constituted housing authorities.

Twenty-six states have passed the necessary enabling legislation, and 41 housing authorities have been established. When the Federal Government undertakes an extensive program of loans and grants to housing authorities, many additional housing authorities will undoubtedly be created throughout the country in order to participate in such a program. Housing legislation is now being introduced in the present sessions of the legislatures in states which lack such legislation; where changes are necessary in existing housing legislation, the necessary amendments are also being introduced. Judging from the current reaction to these housing bills, we are expecting much of this legislation to be enacted during 1937.

Technicians with experience are available to shape the development of local programs. In short, it would seem that, as soon as the necessary Federal legislation is authorized, we are to be under way.

Yet there is one potential obstacle capable of hamstringing the whole program. This is the matter of taxes. Shall public housing projects pay ad valorem taxes? Is it fair to exempt them entirely from taxation? Shall cities accept a compromise between these two extremes?

The problem of taxation has been glossed over in the vociferous feeling for, or against, the basic notion of public housing. Since the PWA and RA projects were developed by the Federal Government, they were not subject to local taxation, and whatever "service charge" they might return was left a matter for negotiation with each community.

On the other hand, local housing authorities will be bound by local statutes. If their projects are subject to taxation under existing statutes, then there will be no discretion with respect to a fair adjustment thereof. Of the 26 states and one territory which have authorized public housing, 15 states grant tax exemption on real property, and 11 states and Hawaii do not. Los Angeles, by virtue of its city charter, may engage in housing and has granted tax exemption on real property acquired therefor. No other city in California is so empowered, and the state has passed no housing authorities legislation.

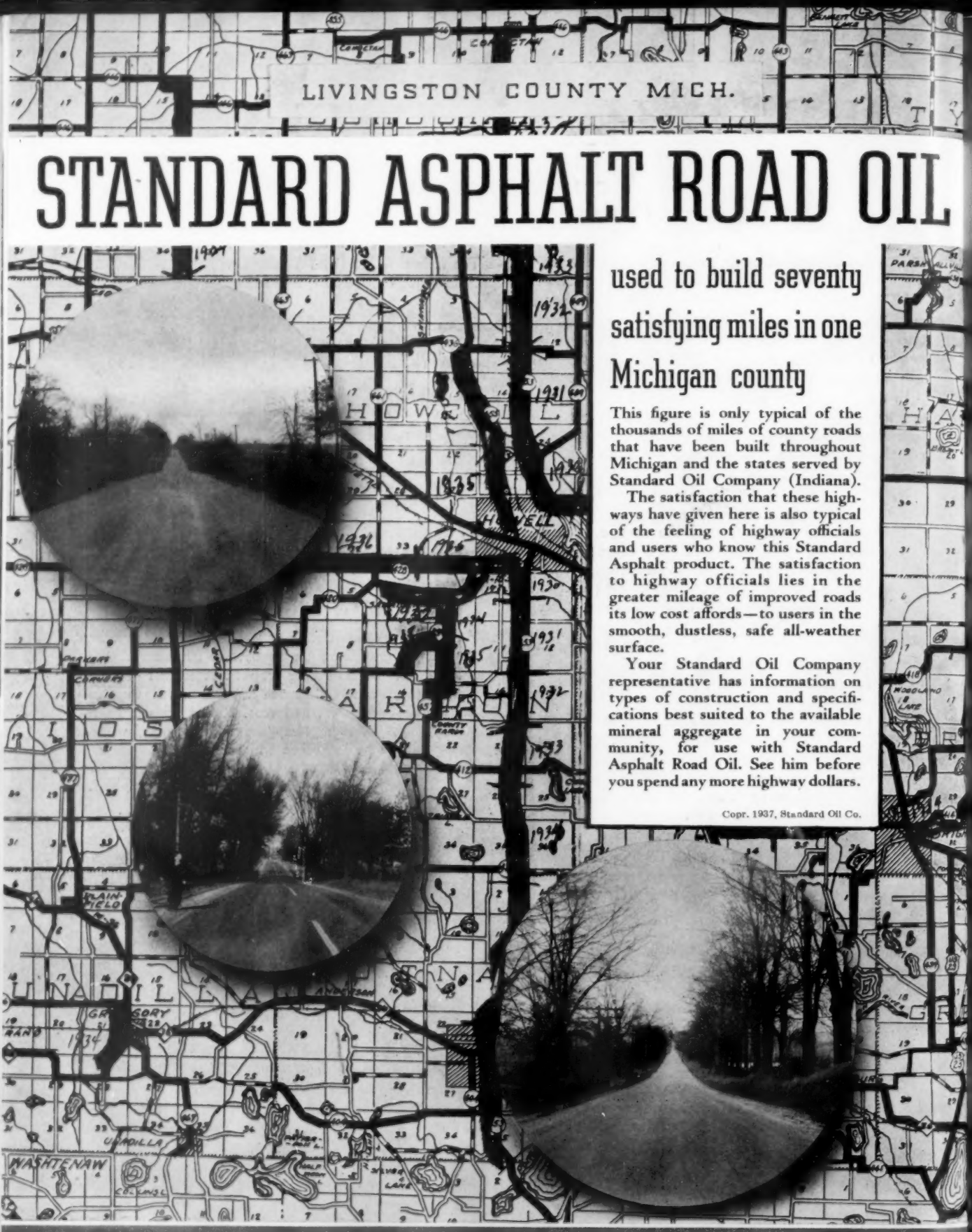
The following list (with S indicating Securities and RP indicating Real Property) shows the line-up:

TAX EXEMPT	NO TAX EXEMPTION
Arkansas (RP)	Alabama (S & RP)
California (RP) (Los Angeles only)	California (S) (Los Angeles only)
Colorado (S & RP)	Delaware (S & RP)
Connecticut (S & RP)	Hawaii (RP at a fixed rate)
Hawaii (S)	Illinois (S & RP)
Indiana (S & RP)	Maryland (S & RP)
Kentucky (S & RP)	Massachusetts (S & RP)
Louisiana (S & RP)	Michigan (RP actually used for housing facilities)
Michigan (S & RP not actually used for housing facilities)	Montana (S & RP)
Nebraska (RP in certain cases)	New Jersey (S & RP)
New York (S & RP)	Ohio (S)
North Carolina (S & RP)	South Carolina (RP)
North Dakota (S & RP)	Tennessee (S & RP)
Ohio (RP)	Wisconsin (RP)
Oregon (S & RP)	
Pennsylvania (S & RP)	
Rhode Island (S & RP)	
South Carolina (S)	
West Virginia (S & RP)	
Wisconsin (S)	

The Tax-Exemption Controversy

At the present time certain articulate groups purporting to reflect public opinion are opposed to tax exemption in any degree on public housing projects. A number of newspaper editorials have condemned it, some mayors have indicated their opposition, and real estate boards are particularly vocal in their disapproval. It is an issue of growing importance and one which is bound to raise a storm of controversy within the next few years. The present opposition is based largely on ignorance or misunderstanding of the issues involved. Before this opposition becomes more influential, it seems necessary to analyze the subject carefully and dispassionately.

The principles on which tax assessment in this country is theoretically based take into account the relative capacity of the citizens to pay taxes, and to some extent the benefits received from such taxes. One reason why the greatest percentage of our local taxes is levied on real estate is that a lien on property is regarded as the best guarantee against tax delinquency. Value of that property was selected as the basis of assessment, since it was supposed to relate closely to the capacity of the owner or tenant to pay taxes. In practice, of course, this theory is frequently disregarded. Because of a general belief in the speculative rise in urban land values, dealers in land and (unfortunately) assessors, too, often trade in terms of "future values." An example of this is the absurdly high assessed values of slum properties on the lower East Side of New York. Yet, numerous as they may be, such exceptions do not invalidate the principle that so long as the rich live in the best houses and the poor in the worst, ad valorem taxes bear some rough relationship to ability to pay. If, however, the rich live in modest houses, the value of their homes ceases to represent their proper tax assessment. Likewise, if the poor are enabled to live in better housing than the customary shacks and tenements, assessment on the value of



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used to build seventy satisfying miles in one Michigan county

This figure is only typical of the thousands of miles of county roads that have been built throughout Michigan and the states served by Standard Oil Company (Indiana).

The satisfaction that these highways have given here is also typical of the feeling of highway officials and users who know this Standard Asphalt product. The satisfaction to highway officials lies in the greater mileage of improved roads its low cost affords—to users in the smooth, dustless, safe all-weather surface.

Your Standard Oil Company representative has information on types of construction and specifications best suited to the available mineral aggregate in your community, for use with Standard Asphalt Road Oil. See him before you spend any more highway dollars.

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Asphalt for every purpose

STANDARD OIL COMPANY

(INDIANA)

the improved housing ceases to represent the capacity of its occupants to pay taxes. To put it another way, the principle of ad valorem tax assessments on buildings is fair only as long as the value of property reflects the wealth of its users. No matter what local tax laws may require, every taxing body in the country has been forced, in the recent depression years, to recognize this truth. Tax assessments and collections have made a mockery of tax statutes. Everyone is familiar with cases where assessors have closed their eyes to the law and have listed presumed 100 per cent values at less than the amount of a first mortgage. On the other hand, high percentages of tax delinquency, voluntary demolition of buildings to eliminate taxes, and submission to tax sales, have been the answer of citizens all over the country to assessors who placed rigid observance of the law above a sense of justice.

No matter how property may be assessed, the taxes collected on the buildings must in the long run reflect the users' wealth and not the property's value. That is fundamental to an understanding of the question of taxation of public housing projects. If those who oppose any degree of tax exemption recognized this premise, their opposition would vanish.

The fact is that without at least partial exemption from ad valorem taxes no proper public housing can be operated. If the eleven states and one territory which do not now grant this exemption really want slum clearance and low-rent housing, they must amend their laws, and the 22 remaining states now or hereafter considering housing authority legislation must see to it that exemption is provided for in these, or companion, bills.

Facts Needing Consideration

In considering the taxation of low-rent housing projects, public officials must understand and take into consideration a number of hard facts.

1. Low-income groups have never been able to pay the full cost of the services provided for them by municipalities. They never will be able to pay their proportionate share unless their incomes are considerably raised. Studies made in slum areas of a dozen cities indicate that the ratio of tax income to outlay in municipal expenses is about 1 to 4 or 5.

2. Municipal officials and the public have been satisfied with the usual pittance assessed on slum properties, because this amount was based on the supposed value of the shacks and tenements.*

3. In most slum areas tax delinquencies seem to indicate that even the nominal assessments are too high. In the purchase, in 36 cities, of 3,000 parcels of land for low-rent projects, PWA found that an average delinquency of approximately three years was cleared up through sale to the Government.

To argue these facts, which are universal and unchanging, is futile. To ignore them and to impose ad valorem taxes on proposed public housing projects is to stifle the slum clearance movement at birth.

* In cases such as that of the lower East Side in New York, where assessment is based on future speculative value, landowners have paid the disproportionate taxes only as long as they were willing to gamble on the future. The moment they lose confidence in the future, tax delinquency begins on an extensive scale. The effective result is the same as if the properties were assessed at their real value.

Relation of Income and Taxes to Rents

An often-heard contention of those who insist on ad valorem assessment is, "These projects should pay taxes just like any other property." Well, let's see what would happen to the people for whom they are designed if we followed this argument. A study of this nature has recently been made in the PWA Housing Division. Selecting at random three slum clearance project sites from the East, Middle West, and South, staff members ascertained the annual assessment of these areas and then divided that by the number of families living in the area. The result was what the city expected to collect per family prior to construction of the housing project. Next, the tax rate was applied, according to statute, on the value of the new housing project, and that figure was divided by the number of families to be housed. The result was what each family would have to pay, if ad valorem assessment were imposed on the new project.

The table follows:

	Project No. 1 (East)	Project No. 2 (Middle West)	Project No. 3 (South)
Tax delinquency per family at time of purchase	$146.00	$16.50	$17.00
Tax assessment per family under slum conditions, per annum	$66.54	$21.30	$15.50
Tax assessment per family on new project under ad valorem taxes, per annum	$260.00	$93.50	$91.25
Per cent of tax increase	400%	440%	600%

To assume that families which have been paying rents of from $3.00 to $6.00 per room per month (tax included) will suddenly be able to pay from $2.50 to $7.00 per room per month, *in taxes alone*, is absurd, to say nothing of the justice of the case. Now these examples are not isolated phenomena. The same principle will apply in any city. It is incontrovertible proof of the fact that public housing projects designed for low-income families cannot pay taxes on ad valorem assessment.

On the other hand, the taxpayers of any city have a right to insist that, if any exemption from ad valorem assessment is granted to public housing projects, every tenant must be certified as to need and low income. Unless this is done, it is of course possible that people who *can* afford to pay greater taxes may be allowed the benefits of undeserved tax reductions. Under the terms of the housing authorities laws which have been adopted in the various states and which are now being considered, the local housing authority is prohibited from accepting a person as a tenant who can afford to live in safe, sanitary and uncongested privately owned housing.

The Two Alternatives

In the fixing of the revenue to be collected from public housing projects, two methods are possible: first, an arbitrary valuation of the property by assessors so that it will yield taxes within the means of the tenants; and, second, an assessment or charge in lieu of taxes, based on the income of the project.

The first method will continue the present widespread, if illegal, practice of assessors. Its only advantage is that of precedent and of leaving undisturbed the illusion that assessments are in fact based on property values. Its disadvantages, to my mind, far outweigh these expedients. It dodges an issue which must be met sooner or later. It is a clumsy device, subject to periodic vagaries, and it is illegal.

COLORADO COURTESY PATROL

Colorado is a new comer among States adopting Motorcycle Patrols—but already the Colorado Courtesy Patrol has won praise for its smartness and efficiency. The new Indian "Police Specials" represent the highest achievement in machines specially designed for patrol work and traffic regulation. They are dependable, safe and decidedly economical—with many outstanding features, among them the left-hand throttle control and the right-hand shift lever—magneto or distributor ignition optional.

Write today for "Pride of the Force" with pictures and specifications of the new Indian "Police Specials" and proof of Indian's economy in police service.

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INDIAN MOTOCYCLE COMPANY, DEPT. AC4, SPRINGFIELD, MASS.

On the other hand, the second method of collecting sums in lieu of taxes is frank and honest and will produce a truly fair revenue based upon the ability of the low-income families occupying these projects.

Opponents of any tax exemption will cite British precedent where public housing projects pay full taxes. But what are the "full taxes" collected on British projects? They are taxes assessed on a percentage basis against collected rents. In other words, they are established on the very principle which American officials should, in my opinion, accept in their taxation of housing projects.

The fair percentage of project income may be readily determined. If the housing project is a slum clearance and rehousing development, tenants should not be expected to furnish a greater per-family tax income than did those who lived in the demolished slum shacks. This is an absolute maximum. Cities will frequently find that the reclamation of slum areas effects a tangible saving in street maintenance, fire protection, and collection of ashes and garbage. They may find it profitable to pass these savings on in the form of tax rebate to the tenants of the new projects. Some cities, such as New York for instance, have already determined that in the further reduction in rents made possible by complete tax exemption, the boon to the poorest families more than offsets the purely nominal tax loss. (Complete exemption for the present PWA housing projects would deprive cities, on an average, of .0008 of the total annual tax revenue.)

If the housing project is built on vacant land for former slum dwellers, the assessment in lieu of taxes should be based on a predetermined percentage of the gross rentals collected. In the course of years it may develop that housing authorities will build projects for a variety of low-income groups ranging from the almost self-sustaining to the almost destitute. Surveys would quickly determine the possible tax contributions of each group, and this could then be applied as a percentage of rent. Naturally, the percentage would vary somewhat with the variation of income groups. PWA studies of slum dwellers' incomes and taxes paid indicate that a maximum contribution probably should not exceed 5 per cent of gross income.

It is clear that the sums to be collected from a public slum clearance and housing project must be based upon the rent-paying ability of the tenants. An assessment in lieu of taxes, computed upon a fair percentage of gross rental, is one effective method of achieving this objective. Another method is to agree to charges representing an equitable payment for the services rendered to the project. In either case the property included in the public slum clearance and housing projects must be exempt from taxation, with statutory provisions for payments by the housing authority in lieu of taxes. Bills embodying these proposals for fair payments in lieu of taxes have been introduced in many of the state legislatures now in session. These measures should be given full support by all who are interested in a successful and effective public program to provide decent dwelling accommodations for those in the lowest income brackets.

Unless local officials and the public in general recognize not only the justice but also the absolute necessity for tax exemption and the proposed payments in lieu thereof, it is futile to attempt slum clearance and rehousing of slum dwellers. If legal tax exemption is not offered in order to make possible practical tax adjustment, housing authorities will run head-on into one of two impasses. Either they will be forced to fill their projects with tenants who do not need public aid, and will thus encroach upon the field of legitimate private enterprise; or, if they rent to those who do need public aid, they will be forced to default on taxes and will be subject to tax sale, and eviction of their tenants.

There are no alternatives; for you cannot wring honey from an onion and you cannot collect ad valorem taxes from public housing projects.

Editorial Comment on the Foregoing Article

IN the housing dilemma now confronting many of our cities, THE AMERICAN CITY agrees with the Housing Director of the Public Works Administration that public housing projects cannot meet the needs of the low-income families for which they are designed, if land and buildings are taxed at the customary ad valorem rates. As an emergency measure, tax-exemption may be necessary during most or all of the period of amortization of capital costs; the city to collect, in lieu of taxes, a charge for municipal services based on the income of the project.

But justice to private real estate interests is needed also, and a recognition of the fact that public housing cannot become the only pathway out of the slums. These considerations make it essential, as Mr. Gray points out, that local authorities be prohibited from accepting a person as a tenant who can afford to live in safe, sanitary and uncongested privately owned housing.

THE AMERICAN CITY believes, also, that it is high time that our state and local legislative bodies began to consider tax fundamentals. The two most rational theories of taxation in a democracy are the "ability to pay" principle and the "benefits received" principle. In a scientific system of real estate taxation these two theories can be combined, with maximum justice to the taxpayers, as the major source of revenues for local governments. Such a system will involve some differentiation in tax rates between the two elements in real estate—land and improvements. It is the price of land and not the cost of buildings that reflects such community expenditures as police and fire protection, street construction and maintenance, sewage and waste disposal, public education and recreation, and most of the other purposes for which municipal revenues are spent. To the extent that the municipality does not recover in taxes the value of the benefits thus conferred on landowners, such benefits are capitalized by the holders in higher land prices.

Preeminently, therefore, the "benefits received" principle applies to land values; and its more general application would have the wholesome effect of keeping land prices down and thus of facilitating the acquisition of land for low-rent housing and slum reclamation projects. The taxation of improvements, however, works just the other way; for the higher the taxes imposed on homes or apartments, the more difficult it is to provide accommodations at rents which families of low income can afford to pay. These facts are ignored in our present system of real-estate taxation. Their acceptance would reduce or eliminate the need for subsidies and favoritism, and would make many of our housing problems much easier of solution.

New 1937 GMC's now serving the Department of Sanitation, Madison, Wis.

In your industry—in every industry—profit-minded truck buyers are looking to GMC for extra value. Whatever your hauling needs may be, whether you require a half-ton or a 12-ton truck or a tractor with trailer, you'll find in the unusually complete GMC line a "truck-built" vehicle with the proved ability to perform ably and save money. There are both standard and cab-over-engine types ranging in capacity up to 12 tons. And, *of vital importance*, every GMC has advanced stream-style and exclusive "dual-tone" color design that assure exceptionally distinctive appearance. Get the facts! See GMC for extra value!

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Time payments through our own Y. M. A. C. Plan at lowest available rates

GENERAL MOTORS TRUCKS & TRAILERS

GENERAL MOTORS TRUCK & COACH
DIVISION OF
YELLOW TRUCK & COACH MANUFACTURING COMPANY, PONTIAC, MICHIGAN

Repaving with Brick, Using WPA Labor

Ithaca, N. Y., Completed Its Largest 1936 Paving Project in Three Months

By HARRY W. EUSTANCE
City Engineer, Ithaca, N. Y.

STARTING late in the 1936 season, and working with WPA labor, the city of Ithaca was able to repave 8,000 feet of street with brick and asphalt in a three-month period, at a cost of $120,000. Thus the roughest street in Ithaca was converted into a smooth-riding thoroughfare, and no longer were headlight lenses shaken out of their frames.

Stewart Avenue, on which this paving was done, is a main north-and-south street, making it important, and it is the only through street in the hill section of Ithaca. It borders the Cornell University campus on the west, and runs for the southern third of its length through a combined apartment-house, student-rooming section, and business district. The southern third, 2,100 feet long, was paved with brick in 1899. It was narrow, only 28 feet wide for most of its length, and had street-car tracks along the center of the roadway. The old brick section was on a grade averaging 8 per cent, and the street would be a heavy-traffic street if driving conditions were improved, so it was decided to repave with brick.

The middle section, 3,000 feet long, was for 1,600 feet of its length a narrow, 24-foot-wide waterbound macadam paved in 1904, and for the northern 1,400 feet had a bitulithic surface, laid in 1919. Along this section, the street railway was on the east shoulder. It had long been planned to use this railway space when available for needed street widening. Improving the street in 1936, with the railway finally removed, the pavement was widened, resulting in a minimum width of 34 feet. A concrete base was laid on the widened portion, and the entire width, new base and old macadam, were resurfaced with an asphaltic binder of 1-inch minimum thickness, and a 2-inch rough-texture street asphalt.

The northern section of Stewart Avenue, 1,600 feet long, was a perilous, narrow, winding stretch only 16 feet wide. On the west it overhung the gorge of Fall Creek 300 feet below. On the east it was hemmed in by a high gravel knoll, around which the street railway climbed to a still higher part of the city. Any widening over the gorge was impossible, but with the street railway gone it was planned to widen back into this grade and increase the 16-foot width to 30 feet.

While the job for its entire length was interesting, the improvement of the south or brick-paved section was the one that appealed to the citizens. This main entrance to Cornell University was a very important traffic route.

Construction

The removal of twenty-four big, old soft-maple trees which had pushed curbing out of line and heaved walks and pavements was the first work undertaken. Then a trench was excavated back of the existing curb to the new line of the curb, and the stones were all reset. Driveways and crosswalks had to be reconstructed, storm-sewer lines were renewed, catch-basins relocated, and manholes raised to the new grade.

The old brick paving was removed, and several thousand bricks were sold in the neighborhood at $10 a thousand for brick walls and walks, and the remainder hauled and piled in the city yard for manhole and catch-basin construction, small buildings and walls. The rails were removed and sold to local junk dealers for $12 per long ton. The rotted wooden ties were dug up and discarded.

The old Rosendale cement base was in such poor condition that it was decided to raise the grade of the pavement and lay a new concrete base with a minimum thickness of 6 inches. The crown was 6 inches in the 32-foot pavement.

Brick laying followed the placing of the base sometimes within three or four days. A ¾-inch asphaltic mastic cushion was applied, using washed sand to insure uniformity. The sand was mixed in a 5-foot revolving drum mixer with 10 gallons of asphaltic cut-back material per cubic yard of sand. The mastic was spread with shovels, raked loosely and screeded on ¾-inch guide strips. A vertical fiber lug brick 3 inches deep, which showed an average loss of 21.4 per cent under the standard rattler test, was used. They were dropped on the mastic bed, painted with Brickote, a separating agent, and the joints filled with hot asphalt.

WPA Labor

The city secured good help and cooperation from local and district WPA authorities. The laborers also realized that it was an important and necessary piece of construction, and they seemed to show greater industry and efficiency on this project than on any of the many made-work projects previously undertaken by the city.

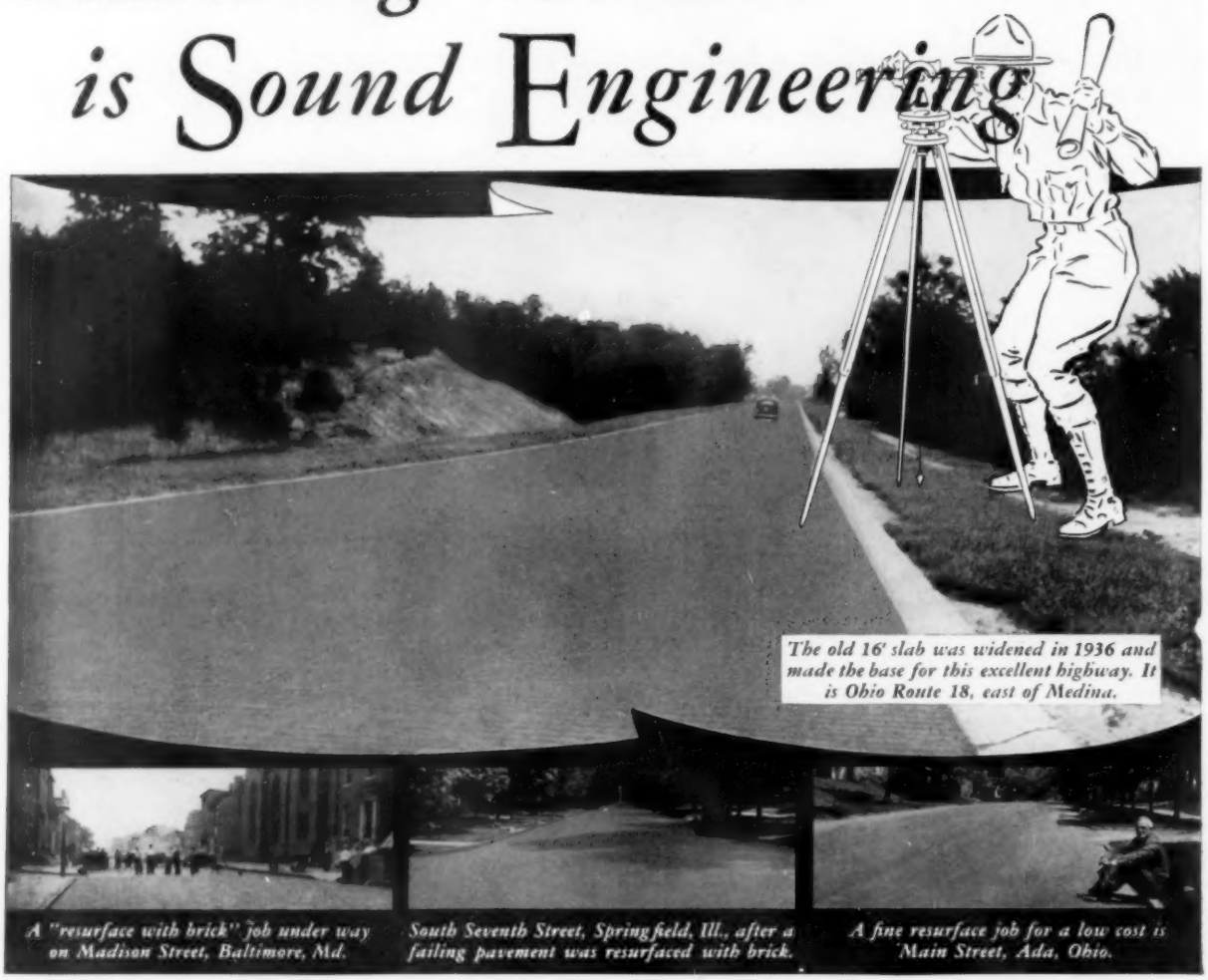
There was some difficulty in the scheduling of the men on the jobs. Laborers were supposed to work two periods of 7½ days per month. The city arranged for 4 gangs of 25 men each, to stagger their 7½ days per half-month, so that 3 gangs, totaling 75 men, were working continually 5 days per week.

Costs

Cost records were not kept on different work items on the job, but when the brick section was entirely finished, the total cost of the extensive work done to secure 7,216 yards of finished brick pavement was $36,000, or $5.00 per square yard. Allowing reasonable estimates for the storm-sewer work, widening and curb setting, sidewalks, etc., the cost of removing the old brick surface, ties and rails, constructing a 6-inch concrete base and finishing and laying the brick surface, totals only about $3.75 per square yard.

ACKNOWLEDGMENT—An abstract of a paper presented before the National Paving Brick Association, January, 1937.

Resurfacing with Brick *is Sound Engineering*



The old 16' slab was widened in 1936 and made the base for this excellent highway. It is Ohio Route 18, east of Medina.

A "resurface with brick" job under way on Madison Street, Baltimore, Md.

South Seventh Street, Springfield, Ill., after a failing pavement was resurfaced with brick.

A fine resurface job for a low cost is Main Street, Ada, Ohio.

● The sound practice of using worn pavements as the base for new pavements dates back to ancient times. Roman road engineers kept building the new over the old until the succeeding layers were piled high—it gave us the word "highway."

Today, highway engineers are turning failure into success by brick resurfacing all manner of pavements that have become a handicap to traffic and a burden to the public purse.

This done, the community owns a new and modern trafficway at a normal cost and is relieved of future excessive upkeep.

Resurfacing with brick is sound engineering. The settled subgrade is left undisturbed; the old pavement structure has high salvage value as a base. The job is quickly completed with a minimum of interruption to traffic.

Once resurfaced with brick a pavement can withstand the destructive action of *weather* as well as traffic. Thirty years or more of service is not uncommon. For additional information, write National Paving Brick Association, (Affiliated with Structural Clay Products, Inc.) National Press Building, Washington, D. C.

BRICK

FOR NEW AND RESURFACE JOBS

Get Your Wires Out of Sight at Small Cost

Interruptions of Services Can Thus Be Avoided

UNDERGROUND cables are like teeth that have been properly capped—they tend to give least trouble. The trend is soundly away from aerial open lines and toward underground construction. This was necessarily slowed by the depression, but now with more money available, many plans are getting underway throughout the country for placing unsightly and unsafe signal wires where they are unseen and safer. This trend, by the way, is not confined to municipal line work, but is being pursued by the American Telephone & Telegraph Co. and by the various private signaling organizations.

What About Floods?

The matter is particularly pertinent at this time when hundreds of municipalities have had their lines seriously damaged, and consequently now have an opportunity to start from scratch or thereabouts and place their circuits underground at the least expense. As is well known, in many cities the telephone company can offer the municipality facilities in the shape of a duct already laid and ready for the mere placement of the municipal conductors. These cables are of course waterproof. After the floods of a year ago, those cities with rubber-insulated underground cables cleaned up and found their systems functioning OK. This was the experience at Pittsburgh, Hartford and Springfield, Mass., among others. Similar experiences have developed out of the recent floods. These cables are made moisture-proof by lead sheath or waterproof rubber insulation.

Combining the use of available ducts with the proper use of parkway or trench cable (which can be laid directly in the ground without conduit), using WPA and relief labor to do the trench work, gives a remarkably low first cost, and except for unusual accidents there should be practically no maintenance.

Does It Need to Be Done Now?

As with everything modern, the best way (sometimes the most expensive at the start) is usually the cheapest in the end. If the whole idea were one of town beautification, the methods by which the circuits were placed underground would be inconsequential. The safety and protection of the circuits and consequently of the town itself, however, happen to be the controlling motives. The fire-alarm system is not a convenience or an auxiliary, but the one sure way to notify headquarters.

As one town electrician says: "An underground cable system for fire-alarm circuits is the desire of every superintendent of fire alarm." Why is this the case? Does it make their work easier? It does, in two ways: less maintenance and repair, which means less work; and a better position as regards responsibility for continuous service.

What Does It Cost?

The usual method of placing municipal circuits underground is, where possible, to place the actual signal circuits in the telephone company's underground conduit system and not in the same conduit or same manhole with an electrical supply circuit. Similarly, the signal-supply circuits, which supply energy to traffic signals and designation lamps for fire or police boxes, are installed in the electric company's conduits and not in the telephone company's conduits.

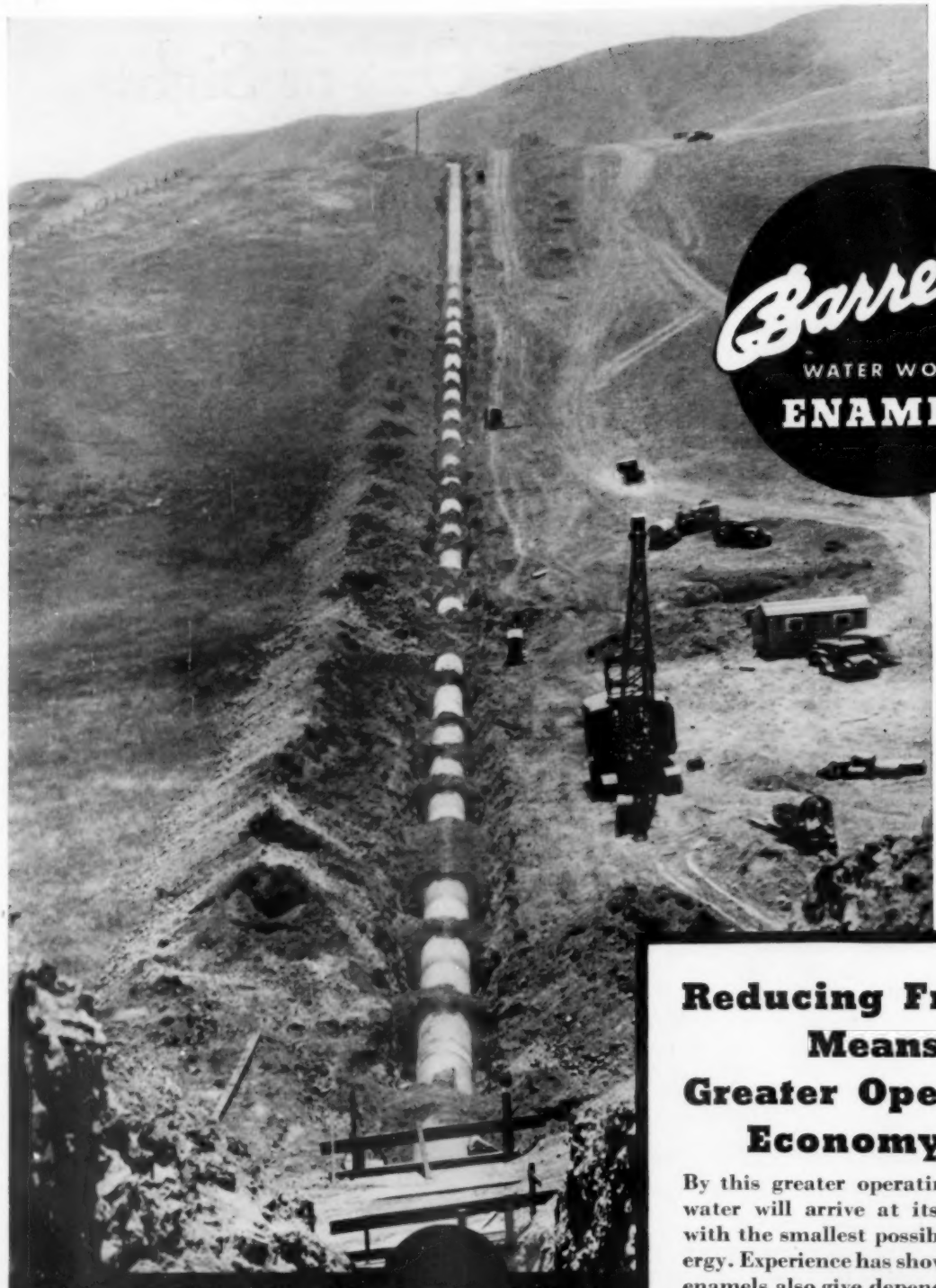
Where the foregoing arrangements are not possible, the municipality can (1) install its own conduit or (2) use the less-expensive parkway-cable placed directly in a trench and covered with a plank and backfill. Of course, it is always possible for a steam shovel unawares to dig up the cable by mistake; but the method is working satisfactorily on signal systems as well as street-lighting systems in many communities.

The National Board of Fire Underwriters allows cables to "be laid, without enclosure in ducts, in grass plots, under sidewalks and in other places where the ground is not apt to be opened for other underground construction." The Board, naturally believing in the best, does not encourage parkway-cable for general use throughout the country. As a matter of fact, however, a good parkway-cable installation is regarded as better than the best overhead system. Furthermore, it does get wires out of sight at little more than the cost of the cable and is permissible practice anywhere if regarded as the preliminary step toward a complete, safe and acceptable underground system of communications. Such a viewpoint is desirable, not only from the safety standpoint, but because with the conduit or duct system it is easier to make additions to the circuits. In fact, one of the important advantages of underground construction is the avoidance of tree-trimming which leads to so many disputes.

Low Cost with Parkway or Trench Cable

Cities that are not now engaged in placing their signal circuits underground, have the opportunity to do so with the aid of WPA and of local relief labor. These men will do the trench work. The cable is comparatively inexpensive. One of its advantages is that it can be laid around tree roots, boulders and other obstructions.

This cable is protected by a metallic or a non-metallic armor, and great strides have been made in the latter type, which is of course considerably more flexible. It is suitable for use not only in fire-alarm, police-signals, and traffic control, but for practically all municipal uses, including the distribution of electric power. With electric-operated oil burners, continuity of service is imperative.



60" diam. Steel Pipe, City of San Francisco, California

FIELD SERVICE . . .

The Barrett Company maintains a Pipe Line Service Department to assist engineers in all coating problems, and also has available Field Service men whose assistance is available where Barrett's protective coatings are used. Inquiries are invited.

Reducing Friction Means Greater Operating Economy . . .

By this greater operating economy, water will arrive at its destination with the smallest possible loss of energy. Experience has shown that these enamels also give dependable, lasting protection against soil acids and alkalis and prevent tuberculation. The specially processed coal-tar pitch from which they are made is the most stable bituminous material known. Phone, wire or write for full details.

THE BARRETT COMPANY
40 Rector Street New York, N. Y.

Forward Steps

Reported by
Municipal Officials, Chamber of Commerce Executives, and Others

Kenosha's New Stadium and Field-House

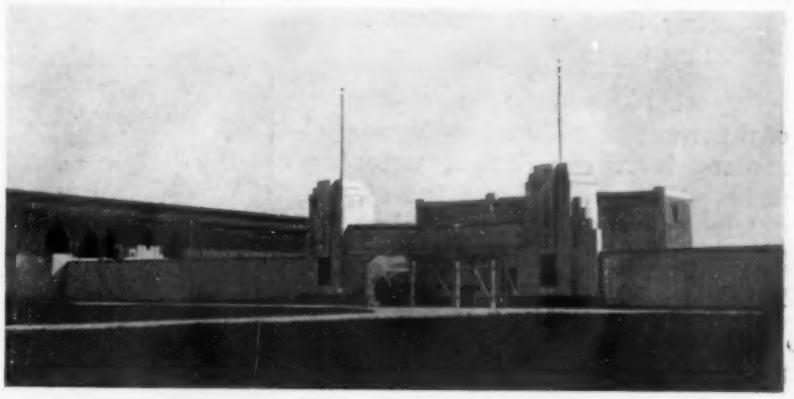
KENOSHA, WIS. — In recent months Kenosha has completed and opened for use a fine municipal stadium and field-house on the shore of Lake Michigan. The project, covering 20 acres, is adjacent to the downtown district and easily accessible. For years the plot of ground on which the stadium now stands was barren and unsightly. The new structure has beautified the entire shoreline and offers the city a fine spot on which to stage sports events and other public festivities. The field-house is at the north end of the stadium, and is 39 feet 2 inches in width by 87 feet 8 inches in length by 15 feet in height. It contains public toilets for men and boys, and for women and girls; showers and dressing rooms, including toilet facilities, for home and for visiting teams. There are also a large recreation room, the manager's office, and a first-aid room in this building, as well as a concession room and a boiler room. The building is heated by a hot air system having an oil heater. Water for showers is heated by an automatic oil-heat unit.

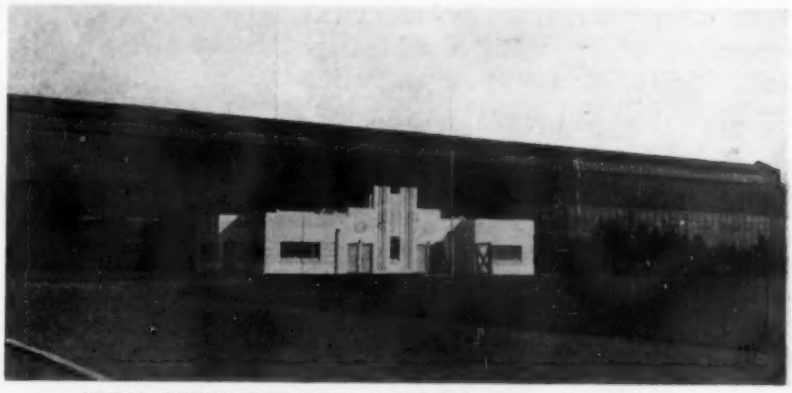
Owing to the fact that the stadium is located on an area formerly used for a dump, on which the average fill was 14 feet, the foundation is of Raymond concrete piles having an average height of 22 feet. The building is constructed entirely of common brick, and its exterior is treated with a cement wash.

Provision is made for the press, with electrical connection for radio broadcasts, and there is an amplifying system on the field. The athletic layout includes a football field, a baseball diamond and dugout for players, and a running track. A storage shed, harmonizing with the rest of the building, protects the usual equipment of portable bleachers, baseball backstops, football goals, scoreboard, etc., when not in use; as well as the maintenance equipment—power lawn mower, hand mowers, soil-screening unit, power roller, garden hose, line markers, etc.

The stadium was a WPA project, and when it was completed a huge celebration in honor of the event was staged by Kenosha citizens, who long had wanted a stadium and field-house of this type. City officials and representatives of every civic and fraternal order were present at the celebration, and spoke on the benefits to the city of having such a fine stadium, which will mean much to the merchants, since it is expected that many out-of-town people will be attracted to athletic events staged here.

MARTIN FRANCIS.





AT TOP—ENTRANCE TO THE KENOSHA MUNICIPAL ATHLETIC FIELD;
BELOW—THE FIELD-HOUSE AT THE STADIUM

The Montclair Association Helps Better Government

MONTCLAIR, N. J.—"Better government under the commission form, and the ultimate adoption of the city manager form" —this in essence is the objective of The Montclair Association.

The Montclair Association grew out of one of the discussion groups of the Economic Forum. The members of this group became interested in a discussion of municipal affairs and felt that an organization should be formed which would stimulate greater interest in municipal affairs in Montclair and promote better government.

Accordingly, The Montclair Association was incorporated under the laws of New Jersey as an association not for pecuniary profit, on May 15, 1934. Its purposes as expressed in the certificate of incorporation were: (1) to further the cause of good government in the town of Montclair; (2) to arouse and maintain the interest of its citizens in the public affairs of the town; and (3) thereby to promote the general welfare of the town of Montclair and all the citizens thereof.

At the first meeting of the Board of Trustees, held May 17, 1934, the Association determined to devote its efforts to procure the adoption of the Municipal Form of Government Act by the town of Montclair.

The Association has played already a significant role in the life of the community. The city manager campaign will not soon be forgotten by those who participated. There was a record vote of 13,228. Against strong opposition from various sources and special interests, the city manager advocates polled 6,508 votes, lacking only 220 votes.

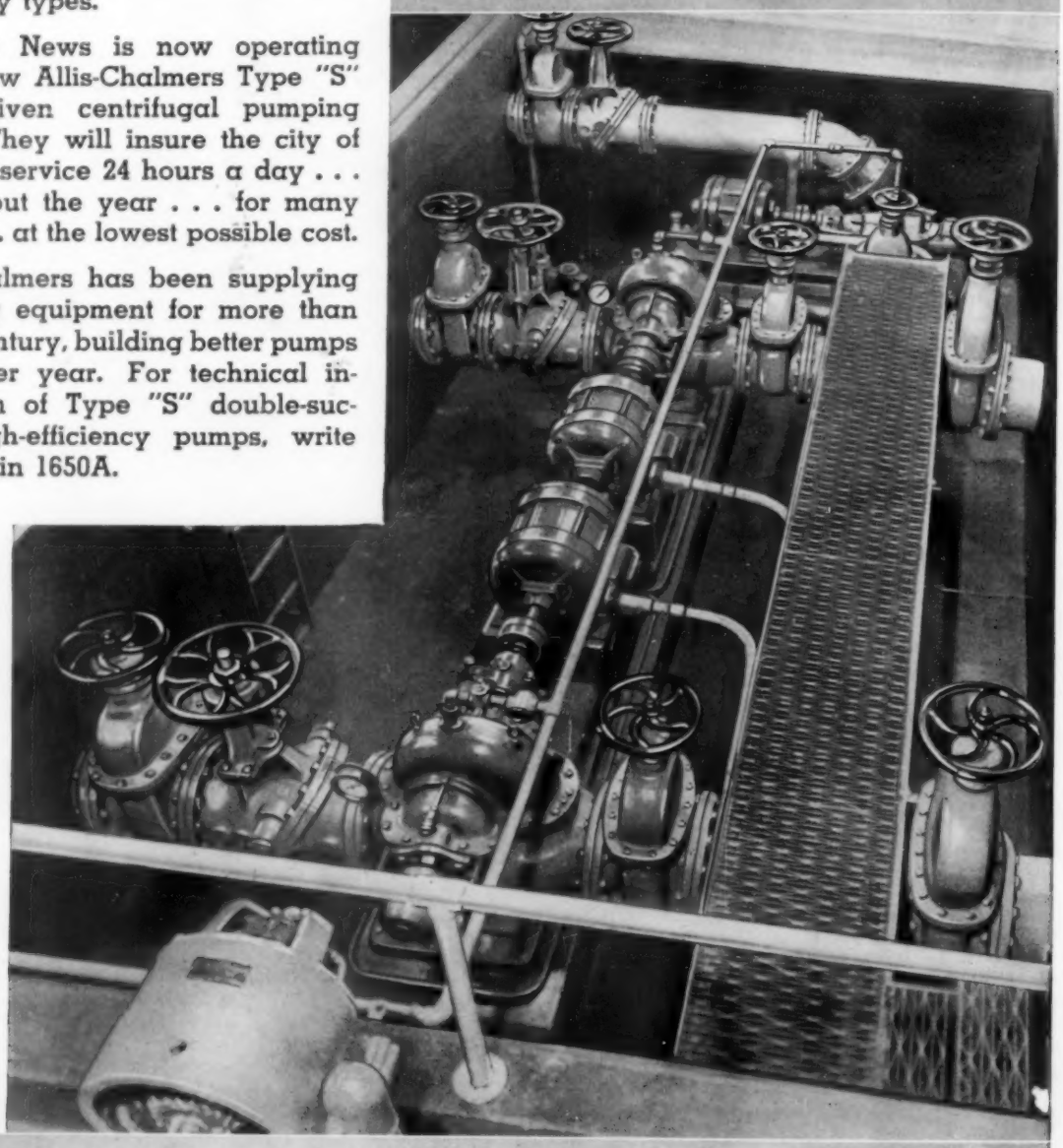
Following the city manager election, the Association functioned as a non-partisan civic body, an organization around which good citizens could rally and through which civic consciousness could find effective expression. As such an organization, the Association proposes to give to the Commission its active cooperation in the solution of the problems which Montclair faces.

Another City Cuts Costs

AVERAGE efficiencies for centrifugal pumps have increased from 10 to 15% since 1914 and 5 to 8% since 1924 due to higher speeds and better hydraulic design. For this reason many cities are saving money by scrapping old units and replacing them with modern high-efficiency types.

Newport News is now operating eight new Allis-Chalmers Type "S" motor-driven centrifugal pumping units. They will insure the city of efficient service 24 hours a day . . . throughout the year . . . for many years . . . at the lowest possible cost.

Allis-Chalmers has been supplying pumping equipment for more than half a century, building better pumps year after year. For technical information of Type "S" double-suction, high-efficiency pumps, write for Bulletin 1650A.



CENTRIFUGAL PUMPS

ALLIS-CHALMERS

MILWAUKEE WISCONSIN

Cooperation involves, first of all, understanding—understanding of the functions of government, comprehension of the possibilities as well as the limitations imposed by the commission form. But, chiefly, it involves understanding of the individual problems with which Montclair and its Commissioners are confronted.

As official spokesman for its membership, the Association publishes *Montclair Matters*. This serves as the medium for the transmission of committee findings. Its purpose is to lay before Association members facts about the town government and its problems, with the confident belief that in so doing the Association is helping to build up an intelligent, informed public opinion without which continuous good government is impossible.

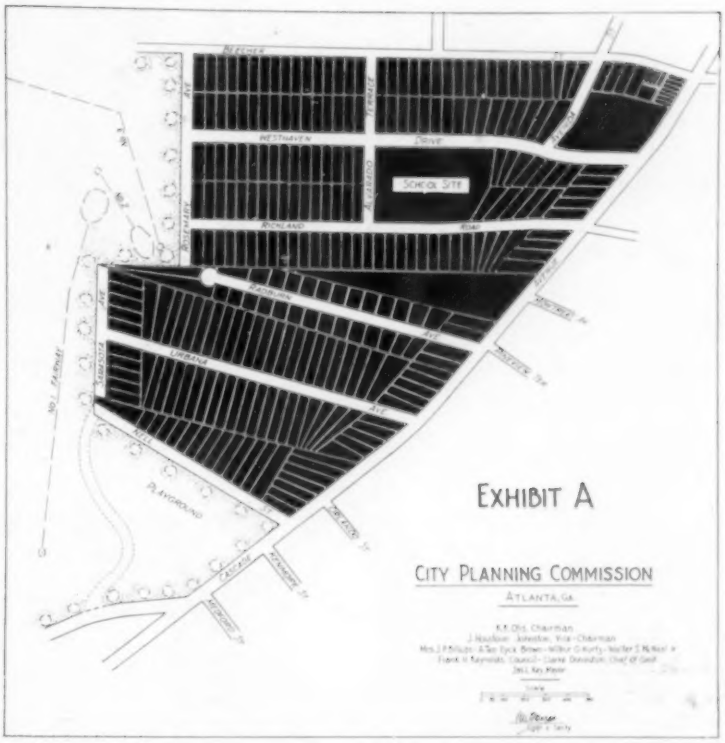
The officers of the Association are: Cleland Austin, President; Mrs. Maxwell Barus, Frank R. Pentlarge, Hubert W. Ryan, Vice-Presidents; Ernest G. Fifield, Secretary; John Garey, Treasurer.

HAROLD BRADDOCK,
Editor, *Montclair Matters*; Member, Executive Board, The Montclair Association.

A Cooperative Triumph in Subdivision

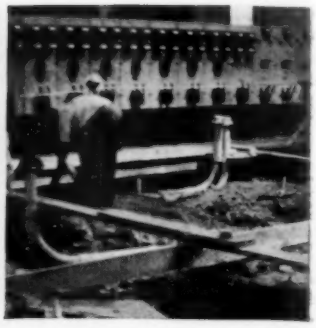
ATLANTA, GA.—Real estate developers in this city have been forced to admit that the local Planning Commission is not concerned solely with a vision of the future, but is prepared to be of practical service here and now. Since 1921 a law has required the filing of all plats for new subdivision developments of more than five lots with the Atlanta City Planning Commission for approval, and the program has demonstrated itself mutually beneficial to developers and local governments. True cooperation between promoters and the Commission has led to the elimination of future narrow streets, ill-shaped lots, faulty street design, dead-end streets and many other undesirable features in sections of Atlanta and in Fulton and DeKalb Counties. In many instances more actual lots have been obtained, bringing the developers additional compensation on their sales. At the same time the local governments can look forward to additional taxes on the added lots and their improvements throughout the years.

Atlanta has no master plan by which to be guided; yet much has been accomplished in individual localities. Perhaps the crowning achievement and best illustration of this work is that shown by the two cuts, "A" and "B." Exhibit "A" presents a proposed subdivision plan for a tract of land bound by Cascade Avenue, Beecher Street, Rosemary Avenue, and a line immediately south of Richland Road as shown, excepting the lots fronting on Cascade Avenue, which has been previously laid out. Here no thought was given to the relation of the development to adjoining properties which would probably take approximately the form and shape pictured. Even a hasty glance convinces one that such a development would be a perpetual liability to the community through its faulty design and the consequent inferior residential growth it would attract. Therefore, the City Plan Commission prepared an alternative subdivision plan, "B," and submitted it to the Atlanta Real Estate Board for an expression. The Chairman of the Appraisal Committee, Ward Wight, reported that there was no question of the superiority of plan "B" over plan "A," and that the value of the area would be increased at least 10 to 15 per cent if the better plan were used. A tabulation of the actual figures involved on the basis of this opinion shows clearly the value of an orderly and coordinated development as against one which is unrelated and disordered.



The Beginning of Conduit Economy . . .

ON STREET-LIGHTING SYSTEMS. The advantages of a permanent, non-inductive conduit system, without the cost of a concrete envelope, because Transite's strength withstands all ordinary soil stresses and traffic loads.



INSIDE THE POWER STATION your installation savings on Johns-Manville Transite Conduit are protected through the years, because this asbestos-cement product is resistant to corrosion, incombustible; cannot rot or decay.

RESIDENTIAL DISTRIBUTION SYSTEMS are another logical service where municipal lighting plants can economize by installing Transite Conduit. For, here again, its strength eliminates "concreting-in". . . reduces installation costs.

IN ALL EXPOSED LOCATIONS—indoors as well as outdoors—Transite Conduit has proved the *lasting* solution to conduit troubles. Years of freedom from maintenance are assured by its resistance to corrosion, incombustibility and imperviousness to weather.

. . . and the End of Conduit Trouble!

THE STORY of Transite Conduit's ever-growing popularity on municipal distribution systems can be written in two sentences:

Its installation effects large immediate savings. And its permanence adds the further economies of virtual freedom from maintenance throughout the years.

How this is achieved warrants the attention of everyone interested in lowering electrical distribution costs on park . . . residential . . . fire-alarm . . . telephone . . . or series street-lighting systems.

INSTALLATION ECONOMIES . . . Thousands of installations all over the country have shown that Johns-Manville Transite Conduit is strong enough to be laid without a concrete envelope—and still withstand all usual stresses and traffic loads. This means big installation savings . . . particularly on one-, two- and three-duct systems . . . where the reduction in cost per duct-foot is obviously great.

LASTING, PERFECT PERFORMANCE An asbestos-cement product, Transite Conduit is highly resistant to soil corrosion, immune to rot or decay, incombustible and non-inductive. Hence, maintenance is cut to an absolute minimum . . . and effectiveness is assured throughout the years.

Johns-Manville
TRANSITE ELECTRICAL CONDUIT
JM

In short, this modern Johns-Manville material is the permanent, economical conduit for every municipal electrical distribution service. Full details given in our free Transite Conduit data-sheet manual. Write Johns-Manville, 22 East 40th Street, New York City.

EXHIBIT "A"

Total good lots..... 234
Total poor lots..... 52

Total lots ..... 286 @ $2,550 = $729,300

EXHIBIT "B"

Total good lots..... 277
Total poor lots..... 17

Total lots ..... 294 @ $3,000 = $882,000

Apparently in this case the better design even defies the accepted rule that quality must sacrifice quantity. Layout "B" should be easily worth the difference of the above figures, $152,700, even assuming that as good a character of construction would take place in the faulty layout as in the improved one.

There were five owners in this entire area, and they were immediately called together to see what could be done. Fortunately there was fine cooperation among them, and the result was the adoption of layout "B." Since that date some streets have been paved along the approved design, and home construction is now progressing in a very satisfactory way. Other streets have been graded only, but when the demand for additional lots justifies it, the remaining streets will be paved, and the total result will be that the developers will profit in the beginning, and the homeowners and the municipality will profit in the end.

R. W. TORRAS,
Engineer-Secretary, City Planning Commission.

A Manual of the Chicago Department of Law

CHICAGO, ILL.—The consolidation of this city's six legal agencies into a coordinated Department of Law was accomplished in 1935. Since that date the Department has devoted itself to the attainment and maintenance of the highest possible businesslike effectiveness in its operation. In line with this new organization, a manual entitled "Manual and Regulations" has been published. In the past, there has been no definite set of rules for the Department, but only a collection of memoranda issued from time to time. This manual changes the situation. Here, for the first time, are recorded in permanent and composite form regulations deemed necessary for carrying-out the important service which legal representation of the second largest municipality in the nation entails. Many of the regulations are those which have been followed for many years, but others are new, the product of an intensive study of all the functions of the Department begun in August, 1935, when the general reorganization program was launched. Here is recorded also a description of the organization of the Department and of its separate functions, so that members of the Department, the legal profession and also the public will have a clear understanding of what the Department does and how it is organized to do it.

It is the conviction of the present executive of the Department that it is essential for all these groups—members of the staff, the legal profession and the general public—to have available the rules of the office and a description of its functions if the goal of sound administration is to be achieved. Otherwise, there is bound to be confusion, not only on the part of the public which the office seeks to serve, but within the Department itself. A central objective of this manual is to help maintain the high standard of cooperation, intelligent and willing service and the conscientious regard for principles of public service which has been demonstrated during this first year-and-a-half by the members of the staff, lawyers and others in touch with the work of the Department.

BARNET HODES,
Corporation Counsel.

"Open-Air School" Pupils Benefit from Natural and Artificial Sunlight

NEWARK, N. J.—Gratifying results have been obtained in the promotion of health at the Boylan Street Open Air School in Newark. This school is the outgrowth of many years of experimentation with an open-air school and with open-window classes.

The Boylan Street School was opened in September, 1930, and cost approximately $214,000, exclusive of equipment and grounds. Its architecture is Holland Dutch, and the sun motif, signifying health, which decorates the main entrance, has been repeated throughout the building. The sun streams into the auditorium, kitchen, dining rooms, classrooms, medical rooms, and lamp room. The interior of the building is attractively decorated in blue, tan, and soft gray.

The school accommodates 100 pupils, and always has a long waiting list eager to be admitted. The pupils are usually undernourished and have a marked tendency toward tuberculosis. Of course, no active cases of tuberculosis are admitted. The Board of Education supplies the pupils with three meals daily, breakfast, dinner, and a light lunch before they are dismissed for the day. These meals are planned by a nutritionist who gives attention to each pupil's diet.

All pupils receive daily medical attention and are required to spend at least one hour each day in relaxation on the sleeping porch. Many require corrective exercises, which are given by a specialist in this work. All receive a daily lamp treatment after a shower. A new ceiling sun lamp, recently installed, is the last word in this type of equipment and permits the exposure of sixteen pupils on cots at one time. The cots are furnished with mattresses, pads, and sheets. Each pupil is provided with a pair of trunks, a pair of moccasins, and a sheet, which are laundered weekly, and a pair of goggles, all of which are kept in individual lockers.

The personnel consists of four academic teachers, a clerk, a nurse especially trained in giving lamp treatments, a nutritionist, a corrective gym teacher, and a doctor who visits the school from three to five times a week. The activities are so varied that the academic work is subject to frequent interruptions and must of necessity be individual. The pupils graduate at the completion of the regular eight-year course of study. The academic work has been kept on the same high level as the medical service offered and the pupils and parents give the school hearty cooperation.

CHARLES H. GLEASON,
Assistant Superintendent of Schools,
Board of Education.

Town Reports and Town Maps

Simpler and more readable town reports are answering the report-modernization movement in Vermont. And now there is a drive to make the citizens land-conscious as well as tax- and expenditure-conscious, for it is important that many of the problems of today be thought out in terms of the layout of a town. As a first step in this education, several of the 1936 reports include maps. Three such reports received are for Charlotte, Cavendish and Lyndon, Vermont. 47, 72 and 73 pp. respectively.

HANOVIA ALPINE SUN GROUP SOLARIUM, BOYLAN STREET SCHOOL, NEWARK, N. J.

Does DIAMETER size make you forget ·Long Life ·Low Cost

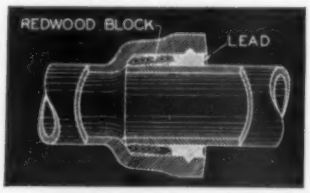
For your 4" mains and larger you insist on *cast iron* . . . the permanent, corrosion resisting pipe that lasts for centuries. Why abandon that sound reasoning below 4"? USE

McWANE 2" CAST IRON PIPE

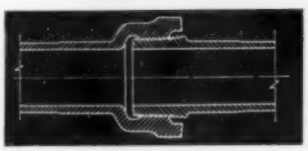
and get the same long life and low cost in your *small* mains . . . for, after all, about 30% of the footage in your distribution system is 2" pipe. McWane 2" comes in long 18 ft. lengths with only *one* intermediate joint . . . easy to cut and tap . . . easy to lay . . . B & S, Precalked or Threaded . . . investigate!

"Just Socket and Calk"

McWANE PRECALKED JOINT



Simple! Self-tightening! Permanent! The joint materials are already in the bell. No lead melting. No lead pouring.



Oversize MALE and FEMALE THREADED JOINT

always used as the *intermediate* joint in factory assembled 18 ft. lengths of McWane 2" cast iron pipe . . . for it is the only joint as strong and permanent as the pipe itself.

Sand Cast Inside and Outside

McWANE CAST IRON PIPE COMPANY

BIRMINGHAM, ALA SIZES 1¼" THROUGH 12"

Chicago, Dallas, Denver, Kansas City, New York, Portland, Ore., Salt Lake City, San Francisco, Los Angeles.

DEPENDABLE ALWAYS

For strong, tight, flexible cast iron water pipe joints *** Used on thousands of miles of pipe for more than 21 years *** Not a failure anywhere.

HYDRAULIC DEVELOPMENT CORPORATION

Main Sales Office: 50 Church Street, New York, N. Y.
General Offices and Works: W. Medford Sta., Boston, Mass.

A DEPENDABLE SELF - CAULKING JOINT COMPOUND

HYDRO-TITE

Do you mention THE AMERICAN CITY? Please do.

Give the Normal Citizen a Break

C. P. WILBUR, State Forester of New Jersey, is making an appeal for better provision for those who have an opportunity to get out of the city and into the fresh air and sunshine on pleasant holidays. Public reservations in New Jersey are woefully inadequate, the state forests and parks are often crowded to capacity and have to turn away prospective visitors because there is no room for all who seek to use them. As a result, the highways are jammed with people who must find their only stopping place along the roadside or on private property, without comfort, without convenience, and often as a nuisance to the property owner. Public reservations are no longer a frill but a necessity. Even before the depression the army of outdoor lovers was on the increase. But in later years the crowds that used to support clubs and resorts have turned to seek their recreation in the public out-of-doors nearby.

The demands of these normal citizens are reasonable and should be met. It is greatly to the advantage of our city population to get away from discontent and confusion into the uplifting serenity of the country. True enough, the monetary cost of making adequate provision for the present need will be great, but it must eventually be met, and the longer the program is deferred the greater will be its cost. A carefully planned specific program for such expansion is available for use at once. More land is necessary. Immediate and rapid public acquisition of abandoned farms, submarginal lands and wild land areas is the important first step. State acquisition of tax-delinquent lands in particular would be doubly wise, lifting a heavy financial burden from the municipalities. Federal funds to supplement state expenditures can be secured if the state funds are made aavilable. Mr. Wilbur makes an urgent plea that the recreation needs of New Jersey citizens be allotted a fair share of the public funds.

THIS?

AND THIS?

OR THIS?

1937 *Tour of European Housing*

THE itinerary for a second housing study tour of Europe, sponsored by the National Public Housing Conference of New York City, includes 15 cities in England and continental Europe. In each of the cities visited, study of the local situation will begin with a meeting in the Town Hall. Each city has designated officials who will conduct the party through local housing projects, explaining the social, economic and political basis on which they are built. One of the most important stops will be made at Paris in June, where members of the study party will attend sessions of the International Housing and Town Planning Congress. The party will be in charge of Miss Helen Alfred and will sail from New York on the *Queen Mary*, June 23, and return on the *Aquitania*, August 17. Address inquiries to the National Public Housing Conference, 112 E. 19th St., New York.

Recent City Manager Appointments

ARTHUR J. BARRY, of Burlington, Vt., has been appointed first City Manager of Middlebury, Vt., effective about April 1.

William J. Blake, Manager from 1932-34, has been reappointed City Manager of Newburgh, N. Y., to replace Joseph A. Fogarty.

William B. Burns has succeeded D. M. Allen as City Manager of Ft. Fairfield, Maine.

Carlos M. de Castro has been appointed City Manager of San Juan, replacing Bolivar Pagan, who has been Acting City Manager.

Charles L. Dimmitt, who has been serving as Acting Manager for the past year, was appointed City Manager of Redwood City, Calif., effective March 15.

John Campbell was appointed City Manager of Troy and North Troy, Vt., on March 10.

I. R. Ellison, former Manager of Eaton Rapids, Grand Haven, and Muskegon, Mich., was appointed City Manager of Jackson, Mich., on February 8.

Ph. Frankenfeld, former Mayor and City Commissioner, was appointed City Manager of Winfield, Kans., to succeed Homer Hanlen, who resigned to assume his old duties as City Clerk.

Ira K. Fuller, for the past two years Town Manager of Troy and North Troy, Vt., has been appointed first Town Manager of Hardwick, Vt.

David King, of Mt. Sterling, Ky., and former City Engineer of Siketown, Mo., has been appointed City Manager of Harbor Springs, Mich., effective March 1.

E. J. Lacour has replaced Louis House as City Manager of Gainesville, Texas.

Reese B. Lockett has succeeded T. A. Low as City Manager of Brenham, Texas.

H. G. Pope, City Manager of Rockford, Mich., for the past year and a half, has been appointed City Manager of Huntington Woods, Mich.

Phifer B. Bostic has been appointed City Manager of Muskogee, Okla., to replace W. H. Pritchett.

H. G. Richards has succeeded O. W. Davis as City Manager of Taylor, Texas.

R. B. Worthington, former County Treasurer, became City Manager of Clovis, N. Mex., on February 1, to succeed John C. Luikart.

CLARENCE E. RIDLEY,
Executive Director, International City Managers' Association.

The Municipal Bond Market

Recent sales of new issues from March issues of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$105,000	Eastchester, N. Y., Street Improvement	1.75	2.5 Avg.	1.71
100,000	Chautauqua Co., N. Y., Refunding Highway Construction	1.75	7	1.73
400,000	Monroe Co., N. Y., Work Relief	2.10	5 Avg.	2.05
100,000	Cheltenham Tp., Pa., School	2.25	6-15 Ser.	2.13
300,000	Lake Co., Ind., Poor Relief	2.25	3.33 Avg.	2.20
1,080,000	Madison Co., Iowa, Primary Road Refunding	2.5	1-9 Ser.	2.37
125,000	Nobles Co., Minn., Refunding	2.5	4-8 Ser.	2.37
150,000	Manchester, N. H., Bridge	3	9.5 Avg.	2.65
450,000	Dallas, Texas, Street Opening and Widening	2.5	1-30 Ser.	2.69
175,000	Trumbull Co., Ohio, Refunding	2.75	5.5 Avg.	2.69
130,000	Warren, Ohio, General Improvement and Refunding	3	7 Avg.	2.79
312,000	Hempstead, N. Y., School	3	8.25 Avg.	2.91
291,000	Spartanburg Co., S. C., Refunding	3.5	11.85 Avg.	3.39
474,000	Millville, N. J., General Refunding	4.5	17.33 Avg.	4.45

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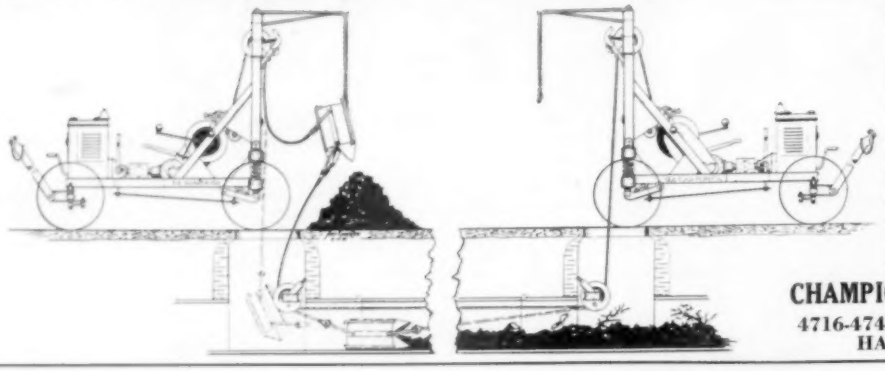

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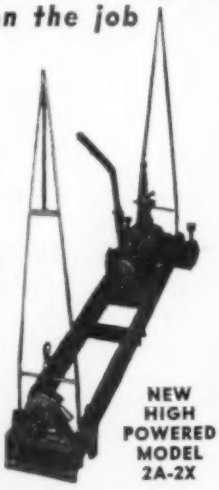

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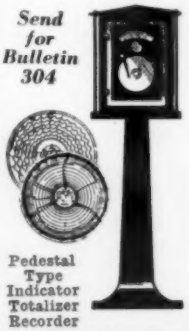

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How Can the Pedestrian Be Saved?

Experience in Philadelphia and the Nation

By T. E. TRANSEAU
Assistant Director, Philadelphia Department of Public Safety

SOME way must be found to reach the adult groups in the same way that the children have been reached, by posters, photographs, radio and pulpit. The middle-aged and older require especial attention.

According to Travelers' Insurance Co. figures for 1936, of the 36,800 automobile fatalities studied, 16,160, or 44 per cent, were pedestrian deaths and only 3,170 of these occurred on rural highways. Of all the traffic deaths happening in the cities, 60 to 70 per cent are pedestrian. In the first three months of 1937, in Washington, D. C., out of 28 traffic deaths, 27 were pedestrian; here in Philadelphia, out of 15 deaths 11 were pedestrian.

Several years ago the attention of the writer was attracted to the number of fatal accidents in Philadelphia which were occurring to pedestrians, particularly those of mature age.

FATALITIES IN PHILADELPHIA, PA.*

Year	Pedestrians	Personal Injuries†	Total	Per Cent of Pedestrian Fatalities
1929.....	270	92	362	74
1930.....	233	93	326	71
1931.....	212	99	311	68
1932.....	191	98	289	66
1933.....	216	108	324	67
1934.....	250	91	341	73
1935.....	226	68	294	77
1936.....	188	64	252	75

* Excluding railroads, electric cars and Fairmount Park.
† Fatal accidents to drivers or passengers.

In studying the foregoing figures, several factors must be borne in mind leading to the variation shown. The automobile first became a serious problem in Philadelphia in 1921. In that year 178 persons were killed, and 6,139 persons were injured. Until 1929, when an all-time high was reached in fatalities, there was a steady increase. In 1930 the Traffic Engineering Division was established and an effort was begun to reduce traffic accidents.

It is evident that the accumulated benefits of the various steps that have been taken to reduce traffic accidents began to bear fruit in the last two years. The principal features of this accident-reduction program were an increased number of traffic signals, the erection of many STOP and warning signs, the use of an immense amount of paint on the streets, many attempts to reach the public with educational information, and increased enforcement activities, including a new traffic court, in the year 1936.

Better brakes, though speeds increased, may have helped reduce collision fatalities. In any event, the average number of pedestrian fatalities for the six years, 1929 to 1934, which was 229, dropped to 207 in the years 1935 and 1936, and the average number of collision fatalities for the same six years (97) dropped to 66 for the years 1935 and 1936, a reduction of 9.6 per cent in pedestrian fatalities and a reduction of 32 per cent in collision fatalities. The total number of fatalities for 1936 was the lowest since 1921, largely due to the efforts made by Mayor S. Davis Wilson to reduce traffic accidents.

The Age of the Killed

It has been a matter of concern and interest to all of us that a great many of the persons killed in the last few years have been elderly or middle-aged. Half the pedestrians being killed on our Philadelphia highways today are over 55 years of age.

Going back: in 1930, only 38 per cent of those pedestrians fatally injured were over 55 years of age; in 1931, it was 43 per cent. There was an average increase of 22 per cent in fatalities to older persons in five years. A similar condition exists for those over 40 years—from 59 per cent to 69 per cent. Those of mature age are suffering the most.

Meanwhile, fatalities among children under 15 years of age have *decreased* 52 per cent in the last five years. The children of school age have had the benefit of safety instruction competently administered continuously from the time they are permitted to walk on the streets alone. In one case, investigated personally by the writer, the father of a child victim said: "A thousand times I told that boy to be careful crossing the road, a thousand times he obeyed me—and once he forgot."

Lighting

Quoting again from national statistics in 827,000 accidents studied, 58 per cent occurred in daylight but accounted for only 42 per cent of fatal accidents; also, of the 38 per cent of the accidents occurring in the dark, the fatalities jumped to 53 per cent. The figures are even higher in the cities.

In many cities the street widths are such, and the lighting is so poor, that before a pedestrian who leaves a curb can reach the other side of the street, a vehicle that was not even in sight when he started his journey runs him down. In almost every case the driver says: "I did not see him until he suddenly appeared in front of my car." His statement must be taken as approximately correct. It is taken for granted that few motorists wish to strike pedestrians.

Speed and the Pedestrian

Assertions have been made that speed *per se* is not the major cause of traffic accidents; that a slow driver may and does cause accidents. A driver on a two-lane highway wishing to proceed at a speed of 25 miles per hour, when everyone else wishes to drive 40 miles per hour, often causes trouble. Accidents occur on crowded streets at very low speeds. There are certain streets in every city, rather narrow, carrying two trolley tracks and heavily parked, where a speed of 15 miles per hour might not be completely safe. Facts of this kind when argued at sufficient length help to convince some of us that speed is not particularly dangerous or important.

Under the classification of "hasty, needless and careless actions of drivers resulting in fatalities," in 1936, 14.5 per cent resulted from driving off the roadway, and another 32.6 per cent from exceeding the speed limit; and 13 per cent were classified as reckless driving. In fact, about half of the fatalities resulted from too much speed.

Inattention

A few years ago in many of our large cities there were a number of so-called death corners. At many of these places, five, six or more people were being killed each year. In Philadelphia, at least, this condition is not true today. Our 252 motor highway fatalities in 1936 occurred at 242 separate intersections. At least 75 per cent of our pedestrian killings are at places where the volume of traffic is no hazard and *the accidents are merely the result of a thoughtless and inattentive pedestrian attempting to cross the highway at a time when a motor vehicle is approaching at a speed slightly too great for the conditions.*

The fundamental remedies to help the pedestrian are, as usual, engineering, education and enforcement.

A pedestrian will get into danger un-

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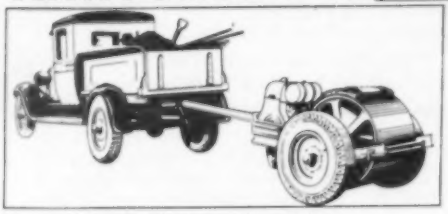

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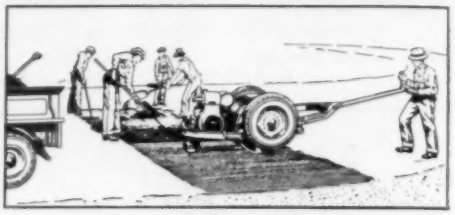

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der modern city conditions if he has to cross open roadways of more than 40 feet, or at most 50 feet. The remedy is pedestrian islands. In 1936 we constructed a number of pedestrian islands. At one location, from July 1, 1935, to December 31, 1936, three pedestrian accidents occurred before the installation of the island and none afterwards, the island having been installed on April 7, 1936. At another location during a period of one year, exactly the same thing occurred. At another location in eight months before the installation of an island, five pedestrian accidents occurred, and none in four months thereafter.

At another island in the outskirts of the city at a very wide intersection where a schoolhouse was located, the result of the installation of an island was only two pedestrian accidents in a six months' period; whereas, the accident experience had been very bad before.

Various steps were undertaken to assist the pedestrian. Study was given to revision of time allotted for pedestrians crossing at signalized intersections. Signs were erected and crosswalks were painted at hundreds of intersections. The pedestrian was always the first item of consideration in any planning or proposed change in traffic regulations; which is as it should be under today's conditions.

Enforcement

The principal means by which pedestrians can be helped, as far as enforcement activities are concerned, is at intersections and by the reduction of speeding. Where pedestrian travel is very heavy, the officers have remained at signalized points in order to make sure that the drivers stay behind the white lines.

At present, police officials plan to give monthly study to "bad corners" and a follow-up on reduction of accidents at these points as they are pointed out by the statisticians.

The author concludes this article with full realization of the inadequacy of the solution of the pedestrian problem as proposed by him. It was prepared in the hope that it will arouse interest, draw criticism and suggestions.

Look Behind Buildings for Parking Space

A SURVEY of space in the rear of business buildings often discloses unused areas which, if cleared of rubbish, provide for the parking of many cars. Such areas may be used to store cars of business men who park in neighboring streets and absorb valuable curb space which should be available to transient parkers.

An investigation to determine how much such space is available, how it may be put to use, and organizing the business men of any block to utilize available areas, often results in substantial relief by reducing the all-day parkers in business areas.

G. G. KELCEY,
Signal Service Corporation, Elizabeth, N. J.

National Safety Council Awards Traffic Plaques

ON March 15 in the city winning the Grand Award, the National Safety Council awarded plaques and honorable mention to 46 cities and three states for principal achievement in traffic-accident reduction and in education, engineering and enforcement leading to such reduction, during 1936.

In competition with 1,013 cities, New York won the grand prize as the city that "came nearest during 1936 to doing for traffic safety the maximum that practically could be done in that city," bringing fatalities to the lowest figure since 1922. New York also ranked first among the 13 cities of more than 500,000 population.

Cities are classified in six groups of population: 500,000 up; 250,000 to 500,000; 100,000 to 250,000; 50,000 to 100,000; 25,000 to 50,000; 10,000 to 25,000. Best-record cities in these groups received plaques. Their mayors explain their success briefly below:

NEW YORK.—Major credit goes to the Police Department for the work which led to conditions that merited the award. Though working under the most difficult traffic conditions—perhaps the most complex in the entire country, we were able to reduce accidents and save lives. The answer: careful traffic regulations and directions; an intensive educational campaign; the elimination of unnecessary noise; careful investigation of major accidents; and the elimination of ticket-fixing.—FIORELLO H. LA GUARDIA.

KANSAS CITY, MO.—In 1936, our Traffic Department continued its studies of accident hazards. Streets have been widened and repaved, pedestrian islands, signs and signals have been installed or relocated.—BRYCE C. SMITH.

OMAHA, NEBR.—Of particular importance was the effective enforcement of traffic laws under the able leadership of Police Commissioner Richard W. Jepsen and Chief of Police John J. Pszanowski. More careful driving, stricter enforcement, closer attention to traffic lights and signals and to keeping brakes and lights in good condition, were emphasized continually during the year.—DAN B. BUTLER.

JACKSON, MICH.—We attribute our success to the intensive use of the three "E's"—engineering, education, and enforcement. A traffic survey was conducted to give us a scientific view of the traffic problem in our city. We sent speakers to the public schools and received the whole-hearted cooperation of our local newspaper, the Jackson *Citizen-Patriot*. Our enforcement of traffic laws was efficiently conducted by the Police Traffic Department, and we made full use of the selective system, singling out dangerous intersections for attention. Police traffic officers in radio patrol cars constantly checked the menace of speeders.—RUSSELL BENGEL.

WEST NEW YORK, N. J.—Politics have been divorced from Police Department and Traffic Court. Close attention has been given to perfection of a traffic-control system, which is supervised by an engineer and an officer, both specially trained in traffic work. A chart and careful record is kept of every automobile accident to find where and why most accidents are occurring. We have enlarged our playground and park facilities to keep children and adults off the streets as much as possible.—JOSEPH STILZ.

WILMETTE, ILL.—During 1936, for the first time in 15 years, there were no traffic fatalities in Wilmette. All traffic accidents were reduced 10 per cent; accidents involving personal injuries decreased 20 per cent, and the number of persons injured in traffic accidents was cut 31 per cent. These reductions were made through the combined efforts of the Police Department, the local court and the citizens of the village.—HARRY C. KINNE.

Other Winners

Group One.—Second place, Philadelphia, Pa. Honorable mention: Chicago, Ill.; San Francisco, Calif.

Group Two.—Honorable mention: Denver, Colo.; Dallas, Texas; St. Paul, Minn.; Washington, D. C.; Jersey City, N. J.; Louisville, Ky.; Minneapolis, Minn.

Group Three.—Second place, Paterson, N. J.; third place, Lynn, Mass. Honorable mention: Somerville, Mass.; Peoria, Ill.; Fall River, Mass.; Tulsa, Okla.; South Bend, Ind.

Group Four.—Second place, Lancaster, Pa.; third place, Manchester, N. H. Honorable mention: Berkeley, Calif.; Lakewood, Ohio; Altoona, Pa.; Madison, Wis.; Wilkes-Barre, Pa.; Harrisburg, Pa.; Covington, Ky.

Group Five.—Second place, Superior, Wis.; third place, Raleigh, N. C. Honorable mention: Everett, Mass.; Plainfield, N. J.; Watertown, N. Y.; High Point, N. C.

Group Six.—Second place, Swissvale, Pa.; third place, Augusta, Maine. Honorable mention: Wausau, Wis.; Winnetka, Ill.; Aberdeen, S. Dak.; Freeport, Ill.; Bellevue, Pa.; Ponca City, Okla.

Winners of State Contest

Group A.—Honorable mention: Illinois, New Jersey.

Group B.—Honorable mention: Minnesota, West Virginia.

Group C.—Honorable mention: Idaho, Nebraska.

The judges were Thomas H. MacDonald, Chief, United States Bureau of Public Roads; Miller McClintock, Director, Harvard University Bureau for Street Traffic Research; Dr. C. H. Watson, Medical Director, American Telephone and Telegraph Co., and President of the National Safety Council.

Community Safety

THE NATIONAL SAFETY COUNCIL has just published a new pamphlet entitled "Safety in the Small Community." It is a guide to the establishment of a safety program in towns of between 10,000 and 25,000 and even greater population. The program is based on proven methods of accident prevention, and outlines the broad general principles for the development of community safety work: engineering, enforcement, and education. 64 pp. (Apply to the National Safety Council, 20 North Wacker Drive, Chicago, Ill.)

These patrol cars, equipped with G-E two-way radio, help Evanston, Ill., maintain its leadership in safety

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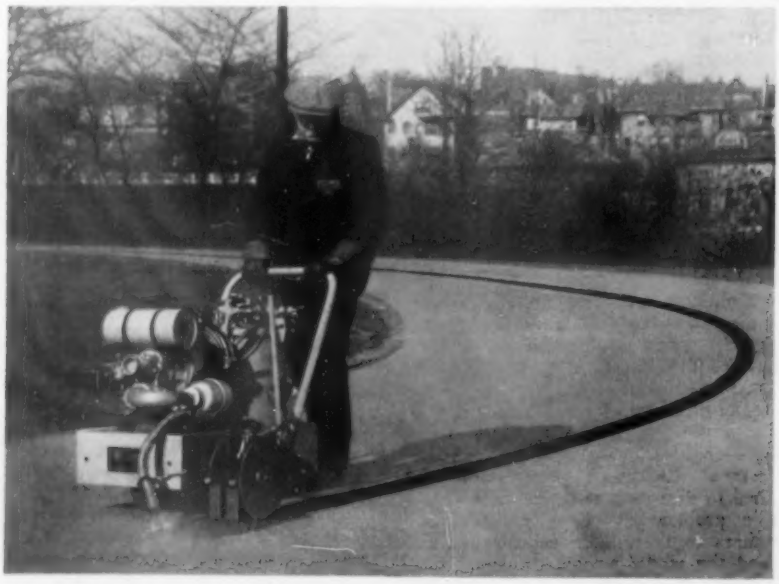

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Improving Municipal Administration

Current Items from the Public Administration Clearing House

Municipal Pay Checks Getting Back to Normal

SALARIES for municipal employees are on the way to a complete "comeback." In half a dozen cities recently, a survey by the Municipal Finance Officers' Association shows, city workers have received monthly pay envelopes of proportions reminiscent of pre-depression days. Springfield, Fitchburg and Lawrence, Mass., and New Rochelle, N. Y., reported full restoration of salaries during the first month of 1937. Dallas, Texas, restored 50 per cent. Baltimore and New York City have provided for complete restorations later this year.

Cincinnati and Los Angeles, Spokane and LaCrosse, Wis., are among the cities that restored salary levels late in 1936. Salary replacements are not entirely a current phenomenon, Carl Chatters, Executive Director of the M.F.O.A., explains. There has been a gentle movement since 1934 to restore pay cuts.

By the end of that year, according to Mr. Chatters, half of the larger American cities had reinstated salaries in whole or in part. Boston, Philadelphia, St. Louis, Denver, Fresno, Pensacola and Savannah were among the cities that made the increases before 1935. In January, 1935, Erie, Pa., restored in full a 10 per cent cut that had been in effect for two years; the city of Danville, Va., did likewise. Early in the same year 18 Michigan cities provided for general increases in salaries ranging from 5 to 20 per cent. San Francisco, Milwaukee, Newark, Nashville, Syracuse, Jacksonville, Tampa, Sacramento, Allentown, Peoria, Evansville, and others followed during the year.

Among cities which raised employees' pay in 1936 were Kalamazoo, Lansing and Saginaw, Mich. Ann Arbor, Mich., recently restored 5 per cent of a 11 2/3 per cent cut. A study of twenty of the larger cities of Oregon in September, 1936, indicated that one had a salary scale higher than in 1929; four had never made any general reduction; nine had made restorations in whole or in part; and only six had failed to place salaries on the upward trend.

Few were the cities which did not make some cuts during the years just following 1930. In April, 1934, a survey made by the International City Managers' Association showed that 201 cities out of 210 reporting had reduced salaries an average of 17 per cent. Cities that made no move to economize by pay cuts during the depression included Albany and Troy, N. Y., Miami, Fla., Wilmington, Del., Council Bluffs, Iowa, Newark and Springfield, Ohio, Reading, Wilkes-Barre and York, Pa., Quincy, Mass., San Jose and Santa Monica, Calif., and Kansas City, Kans.

In many cases restorations have been piecemeal over a period of time. Baltimore, where employees will receive old-fashioned pay-checks some time during 1937, made a partial restoration in 1934. By 1935 and 1936, the city had reduced the salary contributions exacted to 3 per cent for salaries from $1,500 to $2,100, and 6 per cent over $2,100. During the emergency period salary reductions in Baltimore amounted to over $5,000,000.

Justification for increased salaries is found in the price indices of the United States Bureau of Foreign and Domestic Commerce, says the *Municipal Finance News Letter*. The combined index of the cost of living increased from 71.7 per cent (1923 = 100 per cent) in April, 1933, to 85.7 per cent in October, 1936. This was an increase of nearly one-fourth. The index of retail food prices has risen during the same period from 59.9 to 82.9 per cent, or about 40 per cent. The *News Letter* recalls that in April, 1935, the Congress of the United States raised all Federal salaries back to normal by abolishing the last 5 per cent cut.

Council-Manager Movement Expands

THIS year may see an appreciable increase among council-manager cities in the United States, if activity by state legislatures and by cities as reported to the International City Managers' Association is carried out.

In at least four states where the type of city government depends on special legislative acts for each city, bills have been or will be introduced to broaden home-rule powers.

The Legislature of Maine is considering a bill to authorize towns to establish the office of town manager. At present municipalities seeking this plan must secure a special charter from the Legislature and submit it to local referendum. The proposed law is unusual in its provision that two or more towns may unite in the employment of a town manager.

Pennsylvania, which permits only boroughs to come under the council-manager plan by ordinance, is considering legislation to allow all municipalities to vote on its adoption.

The Illinois Legislature, which previously gave only cities and villages under 5,000 population the right to set up council-manager government, will receive a bill, now being prepared, to extend the enabling provision to cities of any size.

When the Florida Legislature meets in April, action will be taken on a new municipal code for optional plans of local government. At present, home-rule provisions are entirely lacking.

Tennessee and Oklahoma, two states in which practically all cities can adopt the manager plan without special legislative action, will probably consider the enactment of a county-manager bill.

At present nine states require their cities to go to the legislature for a special act to change their form of government. These are Delaware, Florida, Georgia, Idaho, Indiana, Maine, Mississippi, Rhode Island and West Virginia. In West Virginia home rule was approved by voters in 1936, and enabling legislation is considered.

In Georgia, where 15 cities have come under council - manager government through special legislative charters, Cedartown (population 8,126) and Americus (population 9,350) have prepared bills to provide them with this form of government. Kentucky cities of the third class—population 8,000 to 20,000—can adopt the manager plan by an act passed in special legislative session at the end of 1936. Previously, only second- and fourth-class cities had this privilege.

Cities Improve Their Labor Employment Policies

SAVING municipal money and providing fairer conditions of work for laborers is the objective of the new employment practice now in force for laborers in Duluth, Minn. This city has just established by ordinance a Bureau of Labor to regulate employment of skilled and unskilled workers, giving the laborers, in effect, a civil service standing. Potential employees are graded upward from common laborers to skilled laborers, and examinations are given to persons wishing to be registered in the latter class.

Toledo six months ago established new rules for labor personnel in the employ of the city by an ordinance that extended the classified civil service to include all laborers. The Toledo Civil Service Commission prepares eligible lists from which all municipal laborers must be selected. Although no written tests are given, all applicants must demonstrate that they are physically fit and adapted to the work. A stabilized compensation system was also set up for the various types of labor, making it possible for department heads to budget estimates accurately by using unit costs per man-day or man-hour.

Few cities, according to the Civil Service Assembly, require little more than a medical examination of laborers. Most of them certify laborers for employment in the order of priority of registration or application, without regard for aptitude, fitness, etc. One municipality selects its laborers by lot; in another, vacancies for most of the skilled labor positions are filled by nomination of the department head. Detroit, Cincinnati and Milwaukee have established definite standards for certain types of labor positions, however,

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Author of "The Law of City Planning and Zoning"

Zoning and Planning Notes

With the cooperation of
EDWARD M. BASSETT
Author of "Zoning: The Laws, Administration and Court Decisions During the First Twenty Years"

Non-Conforming Use

ILLINOIS.—*Reschke v. Village of Winnetka*, 2 N. E., 2d, 718 (Supreme Court, May, 1936).*

"This is an exceptionally interesting case . . . . The action was a suit by the owners of two lots on Center Street in the village of Winnetka to enjoin the village from interfering with their proposed use of their lots. These lots were zoned residential, and plaintiffs' homes were located thereon; but plaintiffs wished to use them additionally for storage of paving materials, equipment and light delivery trucks, all to be used in local service in the village and vicinity—a type of use, which, under the terms of the zoning ordinance, was permitted only in industrial zones.

"Winnetka is a residential community in the Chicago region. It contains practically no manufacturing establishments, and the zoning ordinance was frankly based on the preservation of the residential nature of this suburb of Chicago. Consequently, only a small percentage of the village territory was allotted to industrial uses; but even this small industrial area had not been occupied. There was some doubt, however, as to whether the still available industrial area was located so as to be usable for industrial purposes. . . . The testimony of the planning experts was to the effect that the continued restriction of this strip of Center Street to residential uses would be of great benefit to the community and that the re-zoning of plaintiffs' lots would injure the adjoining properties and be a detriment to the village.

"The Court decided in favor of the plaintiffs, with one judge dissenting. . . . Analyzing the Court's opinion, the fact of the existing non-conforming uses in the neighboring lots was given decisive weight. The law and, indeed, the opinion of the planners is still in a somewhat confused and inchoate stage in regard to the status and the effect of the non-conforming use. If the theory be that the non-conforming use is expected to be gradually done away with, then the existing non-conforming use should not furnish a basis for additional non-conforming uses; and, indeed, when the existing non-conforming uses are permitted to form the basis for additional non-conforming territory, fundamentally that is re-zoning rather than spot adjustment. . . .

"Obviously, the effect of the Court's decision was to stabilize the existing non-conforming uses, add the plaintiffs' lots thereto, furnish a basis for adding still more lots, and thus establish an extensive addition to the industrial zone."

* From the American Society of Planning Officials *News Letter*.

Zoning—Filling Station—Board of Appeals—Consent

MICHIGAN.—*City of East Lansing v. Smith*, 269 N. W. 573 (Supreme Court, November 9, 1936).—The zoning ordinance of the city prohibited the granting of a permit for a gasoline filling station in a retail zoning district except on the written consent of 60 per cent of the property owners within a 400-foot radius, and approval of the board of appeals.

This is not a grant of legislative power to the property owners; their consent does not create a restriction, but simply waives one already existing, after which the subject may be considered by the board of appeals, who may grant or refuse the permit in their sole discretion. And the action of the board of appeals is not legislative, but administrative. It does not make a law, but simply applies one (i.e., the ordinance) to the facts. The prohibition is therefore valid.

EDITOR'S NOTE.—The legal principle involved in this case is excellently stated in the case of *Myers v. Fortunato*, quoted in the Minnesota case of *Leighton v. City of Minneapolis*, in our Notes for November, 1936.

Decision of Board of Adjustment-Change of Condition

NORTH CAROLINA. — *Application of Broughton Estate*, 185 S. E. 434 (Supreme Court, April 20, 1936).—In 1932 a permit for the erection of a filling station at a given location was denied by the Board of Adjustment. In 1935 a similar application was made. Objection to the granting of the permit at this time was made on the ground that the Board had decided the case in 1932, and it could not be reopened and again decided. The evidence showed that traffic conditions had materially changed since 1932. The Court therefore holds that this change in conditions makes the 1935 application a different case from that in 1932. The Court therefore overrules the objection and grants the permit.

Private Covenants—Residential Neighborhood—Oil Wells

OKLAHOMA. *Cooke v. Kinkhead* (Supreme Court, December 1, 1936).—The land in question was restricted by private covenant by a provision that "no building shall ever be used or occupied except for that of residence exclusively." For more than ten years it had been developed and used for residence. Some of the owners of this land are now attempting to lease it for the drilling for oil. The owner of one of the lots, who has developed it exclusively for residence, seeks to enjoin this use of the land, on the ground that:

1. The restriction, fairly interpreted, limits the land to residential use.

2. The owners of the other lots, by acquiescence in the scheme of development for residence, are estopped from using their land contrary to this scheme.

The Court refuses the injunction. If there is any ambiguity in the language of a covenant, resort may be had to conduct and surrounding circumstances to interpret it. But the language of the covenant is clear. It limits buildings only, and not land use. Covenants limiting the use of property must be construed strictly and not extended by implication. The owners of the land are therefore free to use or lease it for the drilling of oil wells.

Undertaking Establishment

UTAH.—*Provo City v. Claudin*, 63 Pac. 2d, 570 (Supreme Court, December 29, 1936).—In a zoning district prohibiting the use of buildings for other than certain specified purposes which included "public and semi-public buildings," an undertaking establishment is not permissible. The fact that undertakers are given preference out of the assets of an estate does not make their business public, so as to render their establishments public or semi-public buildings within the meaning of the zoning ordinance. Nor is the operation of a funeral home in a two-family house in a residential district a "customary home operation."

OHIO.—*Morrison v. City of Cleveland* (Court of Appeals, March 16, 1936).—In 1933, the State Legislature, in a statute to regulate embalmers and funeral directors, defined this occupation as "the business or profession of directing or supervising funerals for profit, or the business or profession of preparing bodies for burial." Some years before this statute was enacted, the city of Cleveland passed a zoning ordinance permitting in an apartment house district certain accessory uses, one of which was "the office of a surgeon, physician, dentist, clergyman, or other professional person residing in the main building." And the Court holds that a funeral home cannot be maintained in an apartment house district, under the Cleveland ordinance, saying in its opinion:

"The zoning ordinance must be deemed to have been passed with reference to the law then in force. The Council most likely did not intend by the above section to comprehend any profession of funeral directing even if it is concluded that embalming and funeral directing is now a profession by virtue of the statute."

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Accidents

City held not liable for death of girl who fell from municipal park swing, for want of proof of negligence (North Carolina Supreme Court: *White v. City of Charlotte*, 189 S. E. 492).

City held liable for injury to employee engaged in sewer construction, if due to negligence of city's representatives (Texas Court of Civil Appeals: *Jones v. City of Texarkana*, 100 S. W. 2d, 198).

City held not liable for injury to municipal airport visitor due to defective roadway, maintenance of the airport being a governmental function and it not appearing to have been operated primarily for profit (Georgia Court of Appeals: *Mayor and Aldermen of the City of Savannah*, 189 S E. 63).

City held not liable for fatal injury of boy who fell from playground swing in municipal park when wooden post broke, maintenance of the equipment being a governmental function (Michigan Supreme Court: *Royston's Estate v. City of Charlotte*, 270 N. W. 288).

In pedestrian's action for injury in falling into depression connecting with catch-basin, evidence as to number of basins in city and cost of same and that they were constructed in a similar manner held inadmissible to show city's freedom from negligence (Mississippi Supreme Court: *McFadden v. Welch*, 170 So. 903).

City held not liable to widow of truck driver's helper under workmen's compensation act for hernia fatally sustained by him in handling refuse, where there was no showing of accident causing the hernia (Michigan Supreme Court: *Hooks v. City of Wyandotte*, 270 N. W. 279).

City held not shown to have such notice of hole in street, caused by sewer line washout, as to render it liable for injury to automobile passenger when front of car dropped into hole (Minnesota Supreme Court: *Baker v. City of South St. Paul*, 270 N. W. 154).

Attorneys

Salaried city attorney held not entitled to extra compensation for services in absence of special agreement (Louisiana Court of Appeals: *Thalheim v. City of Gretna*, 171 So. 591).

Bond Issues

Holders of street improvement bonds held not entitled to general judgment against city, but to accounting and payment of funds applicable to such bonds (United States District Court, Southern District of California: *Brown-Crummer Investment Co. v. City of Burbank*, 17 Fed. Supp. 469).

Township held not entitled to cancel bonds as having issued illegally where full value therefor was received and no offer to return consideration was made (New Jersey Court of Chancery: *Lodi Tp. v. Little Ferry National Bank*, 189 Atl. 58).

Boundaries

Statute permitting disconnection of territory from municipalities, on petition to county or circuit court by owners of a tract of 20 acres or more, upheld (Illinois Supreme Court: *Punke v. Village of Elliott*, 5 N. E. 2d, 389).

Business Regulations

Ordinance requiring load lot commodities to be weighed on city scales held valid as against out-of-town dealers thereby required to unload trucks (United States Supreme Court: *Hauge v. City of Chicago*, 57 Sup. Ct. 241).

Contracts

City held not entitled to recover against contractor or its sureties because paving slab was not as thick in places as contract required, if the city accepted the paving as laid on grades furnished by city engineer and if there was no fraud or collusion on the part of the engineer and the contractor (Wisconsin Supreme Court: City of *Wauwatosa v. Jacobus & Winding Concrete Construction Co.*, 271 N. W. 21).

Council Proceedings

Council meeting record showing no objection to declaration of confirmation of appointment held to raise a presumption that a majority concurred in the declaration (Massachusetts Supreme Judicial Court: *Coleman v. Louison*, 5 N. E. 2d, 46).

Damage Claims

Verdict against city for damages for negligence held not to properly award interest on the damages from the date of the injury to date of trial (Missouri Supreme Court: *Lober v. Kansas City*, 100 S. W. 2d, 267).

Licenses

Ordinance imposing license taxes on carriers for hire using streets upheld (Georgia Supreme Court: *Solomons v. Mayor and Aldermen of City of Savannah*, 189 S. E. 230).

Markets

Ordinance held to vest discretion in commissioner of public markets to determine street space usable for markets and number of permits to be granted (New York Supreme Court, New York County: *Ortiz v. Morgan*, 292 N. Y. Supp. 341).

Municipal Airports

City held authorized to maintain airport and liable for loss of airplane due to hangar fire negligently caused by city employees (Oklahoma Supreme Court: *City of Blackwell v. Lee*, 62 Pac. 2d, 1219).

Municipal Debts

Constitutional prohibition against municipalities contracting any "debt by loan in any form" excepting by ordinance held not applicable to debts incurred for current expenses and evidenced by warrants (Colorado Supreme Court: *Georgetown v. Bank of Idaho Springs*, 64 Pac. 2d, 132).

Municipal Hospitals

Statute authorizing municipal hospitals and issuance of mortgage revenue certificates to secure funds therefor upheld (Florida Supreme Court: *Davis v. City of Melbourne*, 170 So. 837).

Municipal Utilities

Taxpayers held not entitled to enjoin performance of a contract for erection of an electric plant, to be paid for out of earnings, on grounds pertaining to form of ballot, the validity of authorizing statutes, rights of competing privately-owned utility, etc. (Iowa Supreme Court: *Pennington v. Town of Sumner*, 270 N. W. 629).

City held empowered to mortgage electric plant constructed under Federal aid and to be paid out of revenues, with twenty-year franchise to purchaser should mortgage be foreclosed, without submitting the proposition to the electorate (Michigan Supreme Court: *Michigan Gas & Electric Co. v. City of Dowagiac*, 270 N. W. 772).

Statute requiring municipalities to furnish water to hospitals free held unconstitutional, but taxpayer or consumer held not entitled to sue on behalf of city to collect rentals for water furnished (Ohio Court of Appeals, Summit County: *Kasch v. Peoples Hospital Co.*, 5 N. E. 2d, 1020).

Official Appointments

Night watchman appointed by mayor without office having been created as required by statute held not entitled to recover against town or mayor on being discharged (Iowa Supreme Court: *Peterson v. Town of Panora*, 271 N. W. 317).

Official Contests

Title to office, as between conflicting claimants, held determinable in a mandamus proceeding (Massachusetts Supreme Judicial Court: *Ferrante v. Higgiston*, 5 N. E. 2d, 49).

Ordinance Penalties

Convicted person released from confinement before expiration of sentence held not subject to re-imprisonment after expiration of original term of imprisonment, although release was conditioned on his leaving town and he violated the condition (Georgia Supreme Court: *Huffman v. Davison*, 188 S. E. 537).

Pensions

Resigned policeman held not entitled to refund of payments made to pension fund in absence of statutory provision therefor (New York Supreme Court, Appellate Division: *Graven v. Scott*, 292 N. Y. Supp. 771). To same effect, see *Richards v. City of Geneva*, 292 N. Y. Supp. 397, decided by New York Supreme Court for Ontario County.

Retired municipal pensioners held not to have such vested rights as to prevent reduction of the amounts of their pensions under statutory amendment (Illinois Supreme Court: *Dodge v. Board of Education of Chicago*, 5 N. E. 2d, 84).

Police Measures

Ordinance forbidding picketing by strikers held invalid as conflicting with statute permitting certain forms of picketing (Indiana Supreme Court: *Local Union No. 26 v. City of Kokomo*, 5 N. E. 2d, 624).

Salaries

Policemen and firemen held not entitled to excess of salaries provided for by appropriation ordinances above amounts provided in payrolls involving deductions made as economic emergency measure (Illinois Appellate Court, Second District: *People v. City of Elgin*, 5 N. E. 2d, 856).

Ordinances increasing officers' salaries under guise of expense account allowances held invalid, and officers held respectively liable for amounts illegally received (Arkansas Supreme Court: *Laman v. Moore*, 100 S. W. 2d, 971).

Special Assessments

Street approach to railway station held general improvement for which no part of the cost abutting lands could be specially assessed (New Jersey Circuit Court, Essex County: *In re Raymond Plaza West, Newark*, 189 Atl. 105).

Taxation

Municipal tax on realty sales held unauthorized (Florida Supreme Court: *City of Pensacola v. Lawrence*, 171 So. 793).

Taxpayer, having legal remedy to defend proceedings to enforce tax, held not entitled to enjoin such proceedings (Georgia Supreme Court: *City of Nashville v. Lanier Motor Co.*, 189 S. E. 532).

Duration of municipal tax lien held governed by charter provision, and not by general statute (Delaware Superior Court: *Welch v. Campellone*, 189 Atl. 451).

Traffic Regulations

Automobile parking zone ordinance held invalid as imposing unauthorized tax and violating rights of abutting property owners, etc. (Alabama Supreme Court: *City of Birmingham v. Hood-McPherson Realty Co.*, 172 So. 114).

Water Supply

Riparian owner held not entitled to compel village to remove dam, erection of which he did not oppose, but held entitled to award for resulting damages, in default of payment of which dam would be removable (New York Court of Appeals: *Ferguson v. Village of Hamburg*, 5 N. E. 2d, 801).

City held enjoinable against so pumping wells as to exhaust subterranean waters under adjacent lands, unless right so to do should be condemned (Oklahoma Supreme Court: *Canada v. City of Shawnee*, 64 Pac. 2d, 694).

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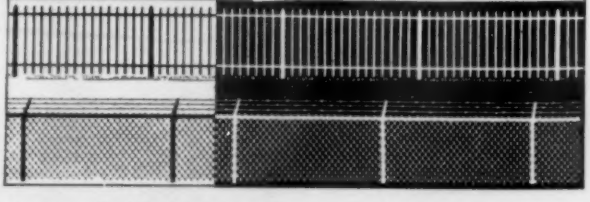

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This book is designed to inspire particularly our children with a love for beauty and an interest in extending and protecting our park lands. With the growth of the city and its congestion and its ugliness, the importance of the park in maintaining the physical and mental health of our people is even more manifest. We must plan our cities better for the well-being of our citizens, we must bring our social, cultural, esthetic and recreational growth up to the level of our industrial and technical advance, or gains in human happiness will be negligible. This volume should inspire anyone to crusade for more and better parks. Text on the history of public parks, on the art of building them and organizing park departments, and on city planning, is set among a delightful array of pictures. Finally the reading matter fades away entirely, and the second half of the book is devoted only to photographs of animals, birds, every kind of outdoor sport and natural scenes of exquisite beauty.

Law Department

The Department of Law of the city of Chicago has just issued two publications, the Annual Report for the year 1936 and Manual and Regulations. The Report is the first one issued by the consolidated and coordinated municipal legal agency which was formed in 1935 through merger of all city legal offices into a single department. It is a full record of the Department's work supporting the belief that the consolidation and the reorganization of administrative procedures has resulted in tangible gains. The Report is prefaced by a chart of department organization. The remainder consists of a summary of the achievements of 1936, and sections on litigation, opinions, legislative activities—city and state, legal services, administrative reorganization and tabular summaries of the work of each division. The Manual and Regulations records for permanent reference by members of the staff, the legal profession and the general public all the rules and regulations of the law office and a description of the organization of the Department and its separate functions. (See page 107, this issue.) 59 pp. and 50 pp. respectively. (Apply to Dept. of Law, 511 City Hall, Chicago, Ill.)

Market Study

"Bridgeport, Connecticut, One of the Major Markets of America" is an attractive appearing study by the Bridgeport Chamber of Commerce. U. S. Government and state figures are presented, which show that this city of 146,716 population cannot be dismissed from the lively markets of America. The location of Bridgeport and its transportation facilities are excellent. The southern section of Connecticut with Bridgeport at its heart is both an intensive wholesale area and a major industrial center. Figures are given in this report to bear out these contentions. 16 pp. (Apply to Robert A. Crosby, Executive Secretary, Chamber of Commerce, Stratfield Hotel, Bridgeport, Conn.)

Housing

The Wagner-Steagall Housing Bill is a challenge to the present Congress to resolutely face one of the most shameful problems of our nation. As a guide to senators and representatives who have not had direct experience or education in the business of housing the lower income groups, the New York City Housing Authority has prepared a 23-page brochure, "Housing Confronts Congress," recounting its fresh experience and answering some of the statements made by various senators in the debate over last year's housing bill. (Apply to the New York City Housing Authority, 10 E. 40th St., New York.)

Water Treatment

Water Treatment and Purification.—By William J. Ryan, Member, A.S.M.E. McGraw-Hill Book Co., Inc., New York. 1937. ix + 242 pp. $2.50 from THE AMERICAN CITY.

Mr. Ryan has attacked the problem of water treatment and purification from the standpoint of the plant operator who must provide a satisfactory water for both domestic and industrial use. He has devoted considerable space to the necessity of furnishing a soft water for boiler feed purposes, because this is the widest industrial use of the municipal water supply. The twelve chapters and the appendix present in comparatively small space an excellent summary of the available information on the construction and operation of different types of filtering, softening, and treating apparatus, with adequate illustrations in the form of diagrams and photographs.

Under the general head of softening, the author covers the general considerations of boiler feed water treatment, the lime and soda-ash process, zeolite softeners, and the care of boilers from the standpoint of the type of water used. Other chapters cover disinfection, the control of tastes and odors and the removal of iron and manganese, as well as treatments for the prevention of corrosion. The appendix contains a number of helpful tables, formulas, and a map showing the average hardness of water by states from data of the Quality of Water Division, U. S. Geological Survey.

Housing

The Annals, March, 1937—Current Developments in Housing.—Edited by David T. Rowlands and Coleman Woodbury. Published by the American Academy of Political and Social Science, 3457 Walnut St., Philadelphia, Pa. xvi + 285 pp. $2.00.

The provision of shelter for human beings is of the very fiber of our civilization. Therefore it is only natural that we should be seriously concerned over a situation where one-third of the housing of a country is substandard and where one-third more is by no means a monument to our technical and artistic achievement. Many of the best minds of today are worrying themselves over this "problem," and the new issue of *The Annals* is an interesting symposium of these current brain children. Practically every phase of the American housing question is allowed breathing space in this publication in the hope that it will clarify to some extent the complex interrelations of the factors involved in improving the production of shelter for all economic groups.

Planning

The advance of interest in planning is extremely significant. We are realizing more and more that if we are to proceed forward from our present stage of civilization we must eliminate the wreckage of haphazard growth and forcibly prevent any further such development. Planning based on careful research and the facts should be our new point of attack. Prior to 1933 there were few examples of state-wide planning work. Now we have 47 state planning boards, a number of regional planning agencies and even a national planning agency in the National Resources Committee. The state planning boards have made many investigations during the last two or three years, and discoveries of wasteful development have been startling. Consequently, they have attacked the problem of long-time rehabilitation in terms of better management of physical resources, better living conditions, better integration of transportation systems, and other constructive activities. A report of the National Resources Committee entitled "State Planning—Programs and Accomplishments, 1937" records the advance made by state and regional planning agencies during the last few years. It is a compilation of authorized statements from the individual boards. VIII + 128 pp. 25c. (Apply to the Superintendent of Documents, Washington, D. C.)

School Buildings and Equipment

The American School and University, 1937.—Published annually by the American School Publishing Corporation, 470 Fourth Ave., New York. 599 pp. $2.50.

The adult of today who visits for the first time a modern school building is amazed at its equipment and facilities. The curriculum of the school which once required only a recitation room or two, has now expanded to require gymnasiums, auditoriums, shops, laboratories, music and art rooms, and libraries. The planning of buildings and their equipment to fit the present-day educational program is of ever-increasing importance, and it is to this subject that The American School and University is dedicated. The first section of this volume, entitled "The School Administrative Unit," points out a problem of considerable concern today, namely, the need for reorganization of small school districts into much larger ones because the smaller units are not financially or administratively in a position to provide the modern equipment necessary to the best educational program. Succeeding sections deal at some length with "Design and Construction of Buildings," "Operation and Maintenance," "Landscape Design and Development," "Physical Education and Athletics," "Classroom-Commercial Department - Library," "Cafeteria-Home Economics-Dormitory," "Laboratory Design and Equipment," "Shop Planning and Equipment," and "Transportation Service." Also, in several final sections are given the names and addresses of school architects, landscape architects, colleges, and their presidents, junior college presidents, private school headmasters, school superintendents, superintendents of Catholic parochial schools, and state education officials, and a classified directory of the products advertised in this annual. The American School and University should be of great practical value to school and college officials and to their purchasing departments.

Traffic

Another "Creating Safer Communities" has been published with the help of the National Bureau of Casualty and Surety Underwriters. This time the New York State Traffic Commission is the local force. Its 48-page pamphlet describes the various activities necessary to deal effectively with the community traffic problem: getting the program under way; preparing and using accident facts; the educational program; enforcement of regulations; engineering; and the rural problem. Official pamphlets of such helpful nature have been prepared in 20 states and are available for the asking. (Apply to the National Bureau of Casualty and Surety Underwriters, 1 Park Ave., New York.)

Rezoning

"Need for Some Practical Method of Rezoning Urban Areas," by Hugh E. Young, gives good evidence of the need, with special reference to Chicago, for the recasting of present zoning plans on the basis of our increased knowledge of city growth factors. First there should be a land use survey and then preparation of an official plan by an official planning body backed by a strong citizens' council to assure its acceptance. For the health of the city it is recommended that measures be taken to stabilize property use in blighted areas; correct factors operating to decentralize manufacturing and industry; foster low-cost housing and rehabilitation of blighted areas through Government loans and grants to local authorities and to groups of property owners assembling their property under some form of trustee plan, and also through loans alone to similar groups of owners with pooled interests, but allowing limited profit; and to establish park areas as buffers between different use areas. With such factors of stability assured, private capital should be attracted on a large scale to the construction of housing for the higher income groups. 32 pp. (Apply to the Chicago Plan Commission, 2300, No. 208 W. Washington St., Chicago, Ill.)

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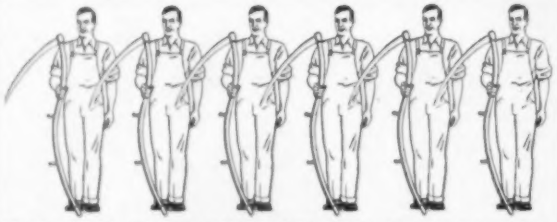

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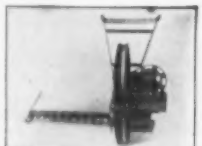

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Housing Management

Housing Management, Principles and Practices.—By Beatrice Greenfield Rosahn, Secretary, American Society of Women Housing Managers, and Abraham Goldfeld, Manager, Lavanburg Homes, New York City. Published by Covici-Friede, New York, 1937. xiii + 414 pp. $4.00 from THE AMERICAN CITY.

With the specter of public housing taking ever a more substantial form, it becomes necessary to consider its shadow, housing management. It seems strange that for all the years we have been building houses for people to live in, we have not, till now, attempted to create a science of taking care of these houses either for the good of the buildings or for the happiness of the tenants. The advent of large-scale housing, however, whether skyscraper apartments or two-, three- and four-story dwellings planned over large areas, has opened our eyes to new possibilities. The skyscraper apartments have caused the introduction of all manner of efficiency devices in technical building running and upkeep and the development of a true art of satisfying human occupants. But the prospect, and now the reality, of managing large-scale housing projects for persons of low income brings additional problems to the fore: the rehabilitation of unadjusted and uneducated families, the introduction of a recreational program, and the cultivation of public interest in a community undertaking. Mrs. Rosahn, Mr. Goldfeld, and their helpers have done some real pioneering in this work, containing sections on the administration of a housing project from the time the first spade is in the ground, building maintenance, community activities, a record of the actual management practices of nine existing housing projects, and a valuable appendix by Joshua S. Chinitz on "The Law of the Landlord and Tenant."

Regional Planning

The 1936 Report, Monroe County, Division of Regional Planning, is the first report of the Division since its succession to the older Regional Planning Board in September, 1936. The new organization is a division of the County Department of Public Works in conformity with the provisions of the county manager law. In 1936, most of the work of the Division of Regional Planning was greatly assisted by the Works Progress Administration. Progress has been made in the analysis of tax delinquency and future assessments in special improvement districts. Ways and means of controlling undesirable subdivision of land have received consideration. A number of services and studies are being made for certain towns in the county, including assessment maps for Irondequoit and Henrietta, zoning and planning studies for Webster and Henrietta, and soil erosion control at the Irondequoit Creek watershed. A school district map, a land utilization map and a relief model of the county have been prepared. A field survey and classification of the plant life native to Monroe County is being conducted. In addition to news on the progress of these activities, the 1936 Report contains a brief of seven informal talks on the basic philosophy, theory, procedure and application of planning, designed to encourage a better understanding of the planning problems of Monroe County. 20 + 39 + 6 pp. Maps and photographs. (Apply to the Monroe County Division of Regional Planning, 1400 South Ave., Rochester, N. Y.)

Tax Limitation

Charles G. Fox, City Auditor of Boston, Mass., felt the importance of making available in condensed form the essential and fundamental facts concerning over-all tax limitation, in order to prevent the reckless passage of the drastic law of this nature proposed in Massachusetts. His pamphlet entitled "Over-All Property Tax Limitation with Special Reference to the Massachusetts $25.00 Tax Limitation Proposal" analyzes the background of the tax limitation movement, explains the Massachusetts proposal, gives the cases for and against tax limitation, analyzes the actual workings of such measures in the eight states where they exist, and ends with a picture of how Massachusetts would fare under the proposal. The author's conclusion is that tax limitation places the cart before the horse and that we should work toward a new tax system rather than patching our present antiquated structure in a manner which would precipitate a financial crisis in our local governments. 71 pp. See page 56, this issue. (Apply to author.)

The Recovery Problem

The Recovery Problem in the United States.—Published by the Brookings Institution, Washington, D. C., 1936. xiv + 709 pp. $4.00.

This volume is a comprehensive survey of the present problems of recovery, and is the product of the collaboration of numerous specialists in the field of economics. The first section, entitled "The Sweep of World Events," examines the background of maladjustments throughout the world which prefaced the depression, and the various readjustments that have taken place. Part II, "Readjustments in the United States," discusses particularly the problem of unemployment and the trend of public finance in this country. Finally, Part III, "Readjustments Required for Recovery," indicates broad lines for improvement of the picture as a whole.

Water Supply

"A WPA Epic" is the title of a story of Basin C of the Loudonville Reservoir, a new distribution reservoir for Albany, N. Y. The design and construction of Basin C was an intricate job of lining a 15-acre glacial hollow with watertight concrete. The question of whether relief labor can profitably be utilized in private employment on other than the lower grades of work has been affirmatively answered by the excellent performance on this project. 24 pp. (Apply to Lester W. Herzog, Works Progress Administration, Old Post Office Bldg., Albany, N. Y.)

Traffic Engineering

"Engineering for Traffic Safety" sets forth the importance of trained engineering judgment in the formulation of a sound and effective program for the reduction of accidents and the facilitation of traffic movement. In most cities traffic regulations are hit-and-miss and certainly not based on any careful study as to the actual effect of each regulation or device in its particular setting. Many needless accidents result from this casual approach to a difficult modern problem. This pamphlet explains what is meant by traffic engineering or traffic planning, why a community needs it, and how to go about getting it, and should give the interested, intelligent citizen a basis on which to judge the failings of his own community. 32 pp. (Apply to the National Safety Council, Inc., 20 N. Wacker Dr., Chicago, Ill.)

Accounting

"Standard Practice in Municipal Accounting and Financial Procedure" is the latest work of the Municipal Finance Officers' Association. It is designed as a yardstick by which local government, state, and provincial officials can determine whether or not their accounting procedures meet acceptable standards. The principles of sound accounting procedure and effective financial administration for city, county, town, township, village, and other local government units are laid down. Although some of the standards might jibe with the recognized legal provisions in certain localities, it is suggested that the laws should give in to the accounting procedure rather than the reverse. 42 pp. 50c. (Apply to the Municipal Finance Officers' Association, 850 E. 58th St., Chicago, Ill.)

Housing

"What Price Subsidy!" is the fourth in a series of brochures published by the New York City Housing Authority. The breach between the lowest price per room per month of private enterprise housing and the highest rent the average working man can pay is pointed out as the difference between $11 and $6, or $5. This breach can only be filled in the short run by some kind of subsidy. There are three outstanding types of subsidy, the capital grant, the rent or deficit subsidy, and the interest rate subsidy, each of which is explained in some detail in this pamphlet. Various combinations of these subsidies can be used to approach a low rental. It is pointed out that if the outright grant were to be employed alone while market money rates were paid, this subsidy would have to cover 70 per cent of the cost in order to reach the $6 rental. If the interest rate subsidy were employed alone to achieve this low rental, the government would have to lend money at a rate very close to zero. 24 pp. (Apply to the New York City Housing Authority, 10 E. 40th St., New York.)

Social Work

Social Work Year Book, 1937.—A Description of Organized Activities in Social Work and in Related Fields.—Edited by Russell H. Kurtz. Published by the Russell Sage Foundation, New York. 709 pp. $4.00.

This work might be termed an encyclopedia of social work, biennially revised. The new edition reflects to a great extent the increasing responsibility assumed by the Government for the minimum security of a large number of citizens, particularly through the passage of the Federal Social Security Act. Many new articles are based on these developments, and several changes in the classification of material have been necessitated through these same forces. More "related" fields are included this year, selected on the basis of the mutual clientele of their practitioners and the social workers. Each of the "Topical Articles" gives a purely objective cross-section view of some organized activity against its historical background. Part II of the Year Book contains a directory of national and state agencies, public and private, in social work and related fields.

Virginia Municipalities

The League of Virginia Municipalities Year Book, 1936-37, is the second edition of this reference work for municipal officials. Practically every phase of local government in Virginia is treated in the factual material contained in this volume. The first section gives a calendar of Virginia local government and lists all varieties of courts in this state. The four succeeding sections deal with Federal, state, county, city and town government in Virginia. The sixth section is devoted to a description of the work of the League of Virginia Municipalities. The seventh section deals with public utilities in Virginia, giving the electric rates in private and public plants and the same information on gas, water and telephone. The remaining sections include a list of the fire insurance classes for the different municipalities, a directory of organizations providing services to municipalities, population statistics and a five-year index of leading articles appearing in the *Virginia Municipal Review*. 298 pp. (Apply to the League of Virginia Municipalities, Travelers Bldg., Richmond, Va.)

Housing

During the summer of 1936, Ernest M. Fisher and Richard U. Ratcliff made a study of European housing for the Federal Housing Administration. The field trip covered England, Holland, Denmark, Norway, Sweden, Germany, Austria, Switzerland, France, and Czechoslovakia and, although the time spent was brief, more than 150 conferences were held with state and municipal housing officials and with representatives of the private housing industry and home financing institutions. A brief summary of the general principles and conclusions evolved from this survey has been published under the title "European Housing Policy and Practice." Fourteen principles which seem to the authors to be justified by European experience are enumerated at the outset of the report and are followed by a series of sections wherein they are expanded and supplemented by statistical evidence or by illustrative description. A fundamental conclusion, number I, states that "governmental participation in housing is permanent, though its form is changeable. The complication of forces in this field has compelled European governments to adopt comprehensive programs." X + 101 pp. (Apply to the Federal Housing Administration, Washington, D. C.)

Work Relief

The heart of our business and industrial system lies in mass production, and mass production without mass consumption must be a failure. The WPA's responsibility is to create useful jobs for the workers private industry does not hire, for without a demand from these consumers, backed by dollars, we shall add the employer himself to the ranks of the unemployed. WPA Administrator, Harry L. Hopkins, in "The Realities of Unemployment" analyzes the present unemployment situation, the future, causes and fluctuations, the role of the Government in dealing with unemployment, the relation of WPA to the unemployed and the unemployable, the need for continuing work relief, and the cooperation of Government and business. 18 pp. (Apply to the U. S. Government Printing Office, Washington, D. C.)

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Highway Improvements

"The Influence of Major Highway Improvements on Traffic Accidents" is the title of an address by Arnold H. Vey, traffic engineer, presented before the American Society of Civil Engineers on January 21, 1937. Mr. Vey illustrates that, in general, major highway improvements when properly designed and applied will help to reduce traffic accidents. But although such improvements would make it more difficult for highway users to indulge in improper practices, they are not sufficiently foolproof nor sufficiently widespread as yet to eliminate the necessity of strong educational endeavors and enforcement activities to cause both drivers and pedestrians to practice safe highway habits. 20 pp. Charts. (Apply to Arnold H. Vey, Division of Traffic Control and Regulation, Motor Vehicle Dept., State House, Trenton, N. J.)

Play Streets

For areas where there are no community centers, playgrounds or parks available, the play street is a temporary answer to the recreational need and a step toward the development of a community recreational spirit warranting the provision of permanent facilities. The Work Relief Program in Street Play has founded on this principle 23 large centers and 46 small ones serving approximately 8,000 individuals weekly in New York City. A manual entitled "Play Streets and Their Use for Recreational Programs," by Edward V. Norton, presents a true picture of the practical difficulties of carrying out such a program. 77 pp. $1.00. (Apply to A. S. Barnes & Co., publishers, 67 W. 44th St., New York.)

Tax Delinquency

"Trend of Tax Delinquency, 1930-1936, Cities of Over 50,000 Population," by Frederick L. Bird, presents as complete general statistical data as possible on the various phases of tax delinquency in United States cities. Tax delinquency is a sensitive reflector of income and real estate conditions and is peculiarly informative of a community's fiscal and economic status and characteristics. This study points out that for the last three years the year-end delinquency on the current tax levy has been stepping toward normal and should arrive by the end of this year. 29 pp. (Apply to the Municipal Service Dept., Dun & Bradstreet, Inc., 290 Broadway, New York.)

Municipal Problems

"City Problems of 1936" is the title of the compilation of the annual proceedings of the United States Conference of Mayors. The meetings opened with Conference-President LaGuardia's address, the Director's report, a message from the Canadian Conference of Mayors, President Roosevelt's statement, and an address by Arthur E. Morgan on "The TVA and the Cities." The remaining papers are classified under the main topics of law enforcement, unemployment relief and social security, Federal-city relations, and municipal problems. Considering the current nature of the problems discussed, this volume should be of interest to all municipal officials. vi + 181 pp. $3.00. (Apply to the United States Conference of Mayors, 730 Jackson Pl., Washington, D. C.)

Planning

After seven years of study, the Planning and Zoning Commission of Dubuque, Iowa, under the guidance of the late John Nolen, has presented a comprehensive plan for the city. It is an attractive-appearing document of 48 pages, and includes a number of illustrations, maps and plans. Before the full discussion of the city plan is given, the principal recommendations are outlined in brief, covering streets and traffic, recreation, public schools, public buildings, business districts, industrial areas, transportation, waterfront, civic esthetics, zoning, regional development and subdivision of land. The remainder of the report strengthens these 13 points through explanation and illustration. $1.00. (Apply to Building Department, City Hall, Dubuque, Iowa.)

Trailer Regulation

"Tourist and Trailer Camp Regulations" is a study based primarily on ordinances in effect in eleven large cities. The states of California, Florida and South Carolina have suffered the largest influx of these migratory dwellers, and most of the regulatory ordinances were born in these states. Sanitation, design and crowding in camps are some of the subjects requiring municipal attention. As more and more cities are being faced with this new problem of regulation, the material in this pamphlet should be of aid to officials in drafting sound legislation. 30 pp. 50c. (Apply to the United States Conference of Mayors, 730 Jackson Pl., Washington, D. C.)

Accounting

The National Committee on Municipal Accounting has compiled a revised and up-to-date edition of "A Bibliography of Municipal Accounting." Books, pamphlets, and articles dealing with accounting and budgeting for states, counties, cities, towns and villages, and schools are included. The material is classified according to both governmental unit and specialized subject. Material published since 1920 has the lead in emphasis. Although no claim of exhaustiveness is made, the bibliography should suffice to provide a thorough knowledge of the fundamental principles and modern practices of governmental accounting and budgeting. A list of bibliographies is included for those desiring to consult additional sources. vii + 30 pp. 35c. (Apply to the National Committee on Municipal Accounting, 850 E. 58th St., Chicago, Ill.)

Other Reports Received

DES MOINES, IOWA.—Annual Report, City Plan and Zoning Commission. 16 pp.

GRAND RAPIDS, MICH.—Annual Report, Treatment Works Division, 1935-1936. 24 pp.

HARTFORD, CONN.—Annual Report, Board of Park Commissioners and Division of Public Cemeteries, year ending March 31, 1936. 56 pp.

HAWAII.—Report to the Governor by the Superintendent of Public Works, year ending June 30, 1936. 75 pp. Maps.

HONOLULU, HAWAII.—Biennial Report, Board of Water Supply, Biennium Ending December 31, 1936. 237 pp.

LITTLE ROCK, ARK.—Annual Report, Municipal Water Works, 1936.

MEMPHIS, TENN.—"Infant Mortality in Memphis." Children's Bureau, U. S. Department of Labor. 103 pp.

ST. LOUIS, MO.—Tower Grove Park, Annual Report, Board of Commissioners, 1936. 13 pp.

TORONTO, ONT.—Annual Report of the Assessment Commissioner, year ended December 31, 1936. 36 pp.

WILMINGTON, DEL.—Annual Report, Chief Engineer of the Water Department, fiscal year 1935-36. 86 pp.

Conventions -- When and Where

(Figures in parentheses following the name of the convention city indicate the estimated attendance other than local)

APRIL 5-7.—CHATTANOOGA, TENN.
Joint meeting. (Patten Hotel.) *American Water Works Association—Southeastern Section.* Secretary-Treasurer, W. H. Weir, 135 State Capitol Building, Atlanta, Ga. *American Water Works Association—Kentucky-Tennessee Section.* Executive Secretary, Howard D. Schmidt, 420 Sixth Avenue North, Nashville, Tenn.

APRIL 5-6.—WASHINGTON, D. C. (100)
Conference of State and Provincial Health Authorities of North America. Annual conference. (Harrington Hotel.) Secretary, Dr. A. J. Chesley, State Board of Health, St. Paul, Minn.

APRIL 5-6.—BOSTON, MASS. (1,500)
Massachusetts Safety Conference. Annual convention. (Hotel Statler.) General Manager, Lewis E. MacBrayne, 80 Federal Street, Boston, Mass.

APRIL 7-8.—WASHINGTON, D. C.
Conference of State and Territorial Health Officers with the United States Public Health Service. Annual meeting. (Public Health Service Auditorium.) Address: Surgeon General, Dr. Thomas Parran, Jr., U. S. Public Health Service, Treasury Department, Washington, D. C.

APRIL 8-10.—BOISE, IDAHO. (300)
Pacific Northwest Regional Planning Commission. Conference. Consultant, R. F. Bessey, 220 Federal Court House, Portland, Ore.

APRIL 12-14.—AUGUSTA, GA. (700)
Association of County Commissioners of Georgia. Annual convention. (Bon Air Hotel.) Acting Secretary-Treasurer, Tate Wright, Athens, Ga.

APRIL 14-16.—MONTREAL, QUE.
American Water Works Association—Canadian Section. Annual meeting. (Windsor Hotel.) Secretary-Treasurer, Dr. A. E. Berry, Ontario Department of Health, Parliament Buildings, Toronto, 5, Ont.

APRIL 16.—SALEM, N. J.
South Jersey Association of Water Superintendents. Regular meeting. (Salem County Club.) Secretary, Walter Spencer, 2707 Bethel Avenue, Merchantsville, N. J.

APRIL 19-22.—LEWISTOWN, MONT.
American Water Works Association—Montana Section. Annual meeting. (Burke Hotel.) Secretary, Herbert B. Foote, State Board of Health, Helena, Mont.

APRIL 21-23.—SAN ANTONIO, TEXAS.
American Society of Civil Engineers. Spring meeting. (Plaza Hotel.) Secretary, George T. Seabury, 33 West 39th Street, New York.

APRIL 21-23.—EXCELSIOR SPRINGS, MO.
Missouri Association of Public Utilities. Annual convention. (Elms Hotel.) Secretary, Jesse Blythe, Merchants Bank Building, 101 West High Street, Jefferson City, Mo.

APRIL 22-23.—MOBILE, ALA. (250)
Alabama League of Municipalities. Annual convention. (Battle House Hotel.) Executive Secretary, Ed. E. Reid, Montgomery, Ala.

APRIL 22-23.—PHILADELPHIA, PA.
Joint meeting. (Bellevue-Stratford Hotel.) *American Water Works Association—Four States Section.* Secretary, Carl A. Hechmer, Department Engineer, Washington Suburban Sanitary District, Hyattsville, Md. *Pennsylvania Water Works Operators' Association.* Secretary-Treasurer, I. M. Glace, 22 South 22d Street, Harrisburg, Pa.

APRIL 26-29.—WASHINGTON, D. C. (2,000)
Chamber of Commerce of the United States of America. Annual meeting. Secretary, D. A. Skinner, 16 H Street N. W., Washington, D. C.

APRIL 26-27.—WASHINGTON, D. C. (500)
National Rivers and Harbors Congress. Annual convention. (Mayflower Hotel.) Secretary, Fred D. Beneke, 1128 Connecticut Avenue, Washington, D. C.

APRIL 26.—PROVIDENCE, R. I. (100)
New England Sewage Works Association. Spring meeting. (Hotel Biltmore.) Secretary, F. W. Gilcreas, State Department of Health, Division of Chemistry and Research, New Scotland Avenue, Albany, N. Y.

APRIL 29-30.—SPRINGFIELD, ILL.
American Water Works Association—Illinois Section. Annual convention. (Abraham-Lincoln Hotel.) Secretary-Treasurer, W. D. Gerber, State Water Survey Division, P. O. Box 232, Urbana, Ill.

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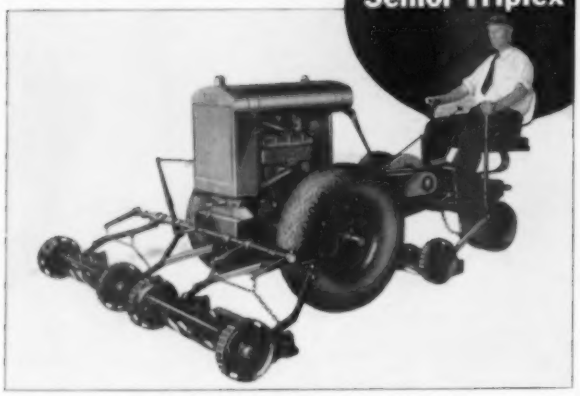

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The Ideal Victor "gets around"—is perfect as auxiliary equipment on large areas—and has ample capacity for the economical cutting of small areas. It is especially well adapted for cutting on slopes and hills. The Victor's quick, safe and easy turning ability makes it unusually valuable for the more difficult jobs and trim-up work. Write for catalog.

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WIRE grass is a tough weed—but not tough enough to stand up against Dolge Weed-Killer. This super-strength chemical kills wire grass—and other deep-rooted growth. Such as crab grass, thistles, wild honeysuckle, wild morning glory, bindweed, burdock, wild onion—even poison ivy! Simply dilute according to directions and sprinkle.

For growth of the kind you usually find on your drives, walks, gutters, tennis courts, sand traps, Dolge Weed-Killer dilutes 1-to-40. One gallon so diluted covers 1,250 square feet on the average. Cost of material in use: under 10c for 100 square feet. Compare!

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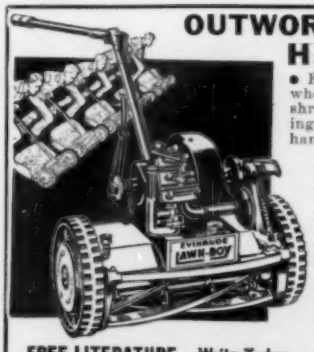

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EVINRUDE LAWN-BOY

Conventions—When and Where: Continued from Page 125

APRIL 29.—NEW BRITAIN, CONN.
New England Water Works Association. Meeting. (Hotel Burritt.) Secretary, Frank J. Gifford, 613 Statler Building, Boston, Mass.

MAY 12-13.—COLUMBIA, MO.
Missouri Association of Mayors and Other Municipal Officials. Annual meeting. (Tiger Hotel.) Executive Secretary, George A. Spencer, 412 Guitar Building, Columbia, Mo.

MAY 17-21.—ATLANTIC CITY, N. J. (1,000)
National Recreation Association. Congress. (The Ambassador Hotel.) Administrative Secretary, Thomas E. Rivers, 315 Fourth Avenue, New York.

MAY 18-19.—BELLINGHAM, WASH.
Association of Washington Cities. Annual convention. Secretary, Russell W. Barthell, University of Washington, Seattle, Wash.

MAY 18-20.—MILWAUKEE, WIS.
National County Officers' Association. Convention. (Schroeder Hotel.) President, George F. Breitbach, Court House, Milwaukee, Wis.

MAY 20-22.—VICTORIA, B. C.
American Water Works Association—Pacific Northwest Section. Annual meeting. (Empress Hotel.) Secretary, Fred Merryfield, Oregon State College, Corvallis, Ore.

MAY 21.—NEWARK, N. J.
American Water Works Association—New Jersey Section. Annual convention. Secretary, P. S. Wilson, 325 Washington Street, Glen Ridge, N. J.

MAY 23-29.—INDIANAPOLIS, IND.
American Public Welfare Association. Annual conference. Director, Fred K. Hoehler, 850 East 58th Street, Chicago, Ill.

MAY 23-29.—INDIANAPOLIS, IND.
Community Chests and Councils, Inc. Annual meeting. Executive Vice-President, Allen T. Burns, 155 East 44th Street, New York.

MAY 23-29.—INDIANAPOLIS, IND. (5,000)
National Conference of Social Work. Annual conference. General Secretary, Howard R. Knight, 82 North High Street, Columbus, Ohio.

MAY 24-25.—MARSHALL, MO.
Missouri Association of Municipal Utilities. Annual convention. Secretary-Treasurer, W. J. McCarroll, Fulton, Mo.

MAY 24-27.—PITTSBURGH, PA.
National Association of Purchasing Agents. Annual convention. (William Penn Hotel.) Secretary-Treasurer, G. A. Renard, 11 Park Place, New York.

MAY 31-JUNE 2.—CINCINNATI, OHIO.
American Forestry Association. Annual meeting. (The Netherland Plaza Hotel.) Executive Secretary, Ovid Butler, 919 17th Street, N.W., Washington, D. C.

MAY 31-JUNE 3.—DETROIT, MICH.
Joint meeting. (Hotel Statler.) *American Planning and Civic Association.* Executive Secretary, Miss Harlean James, 901-03 Union Trust Building, Washington, D. C. *American Society of Planning Officials.* Executive Director, Walter H. Blucher, 850 East 58th Street, Chicago, Ill.

MAY 31-JUNE 4.—CLEVELAND, OHIO.
Building Officials' Conference. Annual convention. (Hotel Statler.) Secretary-Treasurer, Wm. F. Hurd, Com's'n'r of Buildings, Indianapolis, Ind.

MAY 31-JUNE 2.—PITTSBURGH, PA.
Pennsylvania State Association of Township Commissioners. Annual convention. (William Penn Hotel.) Secretary-Treasurer, H. A. Fritschman, Eagle and Darby Roads, Upper Darby, Pa.

JUNE 1-4.—BOSTON, MASS.
The American Institute of Architects. Annual convention. Executive Secretary, E. C. Kemper, The Octagon, Washington, D. C.

JUNE 1-4.—NEW YORK.
Smoke Prevention Association. Annual convention. (Hotel Pennsylvania.) Secretary, Frank A. Chambers, 1411 City Hall Square Building, Chicago, Ill.

JUNE 3-5.—WASHINGTON, D. C. (500)
Eastern Association of Fire Chiefs. Annual convention. (Mayflower Hotel.) Secretary, Chas. E. Clark, Box 217, Wayne, Pa.

JUNE 7-11.—BUFFALO, N. Y.
American Water Works Association. Annual convention. (Statler Hotel.) Secretary, Harry E. Jordan, 29 West 39th Street, New York.

JUNE 11-12.—BOLTON, LAKE GEORGE, N. Y.
New York State Secretaries' Conference. Annual convention. (Hotel Sagamore.) Secretary-Treasurer, J. Kennard Johnson, Chamber of Commerce, Binghamton, N. Y.

JUNE 14-18.—LOS ANGELES, CALIF.
Institute of Government. Annual session. (University of Southern California.) Executive Secretary, Prof. W. Ballentine Henley, School of Government, 3551 University Avenue, Los Angeles, Calif.

JUNE 14-15.—ABERDEEN, S. DAK.
League of South Dakota Municipalities. Annual convention. (Ward Hotel.) Secretary, Dr. G. R. Breckenridge, University of South Dakota, Vermillion, S. Dak.

JUNE 17-19.—OTTAWA, ONT. (300)
Canadian Public Health Association. Annual meeting. (Chateau Laurier.) General Secretary, Dr. J. T. Phair, Spadina House, Toronto, Ont.

JUNE 21-25.—MILWAUKEE, WIS.
American Institute of Electrical Engineers. Summer convention. National Secretary, H. H. Henline, 33 West 39th Street, New York.

JUNE 21-26.—NEW YORK. (3,500)
American Library Association. Annual conference. (Waldorf-Astoria Hotel.) Secretary, Carl H. Milam, 520 North Michigan Avenue, Chicago, Ill.

JUNE 21-23.—STATE COLLEGE, PA. (150)
Pennsylvania Sewage Works Association. Annual conference. (Home Economics Building of the College Hotel—Nittany Lion.) Secretary, L. D. Matter, Kirby Health Center, Wilkes-Barre, Pa.

JUNE 22-24.—DIXVILLE NOTCH, N. H. (800)
New England Association of Fire Chiefs. Annual convention. (Balsams Hotel.) Secretary-Treasurer, John W. O'Hearn, 99 Main Street, Watertown, Mass.

JUNE 23-25.—STATE COLLEGE, PA.
Pennsylvania Water Works Operators' Association. Annual convention. (Pennsylvania State College.) Secretary-Treasurer, I. M. Glace, 22 South 22d Street, Harrisburg, Pa.

JUNE 24-25.—EDMONTON, ALTA.
Union of Alberta Municipalities. Annual convention. (MacDonald Hotel.) Secretary-Treasurer, J. E. Fraser, Wetaskiwin, Alta.

JUNE 27-JULY 1.—DETROIT, MICH.
National Education Association of the United States. Annual meeting. Secretary, Willard E. Givens, 1201 16th Street, N. W., Washington, D. C.

JUNE 28-JULY 2.—NEW YORK.
American Society for Testing Materials. Annual meeting and exhibit. (Waldorf-Astoria Hotel.) Secretary-Treasurer, C. L. Warwick, 260 South Broad Street, Philadelphia, Pa.

JUNE 28-30.—SARATOGA SPRINGS, N. Y. (600)
Conference of Mayors and Other Municipal Officials of the State of New York. Annual convention. Secretary, William P. Capes, City Hall, Albany, N. Y.

JULY 5-13.—PARIS, FRANCE.
Housing and Town Planning Congress. International Federation for Housing and Town Planning. General Secretary, Donald C. L. Murray, 25 Bedford Row, London, W. C. 1, England. *International Housing Association.* General Secretary, Prof. Franz Schuster, Hansa-Allee 27, Frankfort a/M, Germany.

JULY 21-23.—ERIE, PA. (300)
Pennsylvania Chiefs of Police Association. Annual convention. (Hotel Lawrence.) Secretary, F. B. Titus, Lansdowne, Pa.

JULY 27-29.—NEW YORK.
New York State Association of Chiefs of Police. Annual convention. (Astor Hotel.) Secretary-Treasurer, James L. Hyatt, 503 Western Avenue, Albany, N. Y.

AUGUST 15-21.—EVANSTON, ILL. (300)
National Institute for Commercial and Trade Organization Executives. Annual meeting. (Northwestern University.) Secretary, C. R. Miles, 836 First National Bank Bldg., Chicago, Ill.

AUGUST 18-20.—DEARBORN, MICH.
American Water Works Association—Central States Section. Annual meeting. (Dearborn Inn.) Secretary, H. L. Nelson, 2122 Koppers Building, Pittsburgh, Pa.

AUGUST 30-SEPTEMBER 1.—ATLANTIC CITY, N. J.
National Identification Association. Annual convention. (Hotel Madison.) Secretary-Treasurer, E. W. Livingston, Jamesville, N. Y.

AUGUST 30-SEPTEMBER 2.—CLEVELAND, OHIO. (1,000)
National Municipal Signal Association. Annual convention. (Hotel Statler.) Secretary, Irvin Shulsinger, 7 East 42d Street, New York.

SEPTEMBER 1-3.—BALTIMORE, MD. (400)
National Shade Tree Conference. Annual conference. (Lord Baltimore Hotel.) Secretary-Treasurer, Dr. R. P. White, New Jersey Agricultural Experiment Station, New Brunswick, N. J.

SEPTEMBER 13-16.—BOSTON, MASS. (200)
Municipal Finance Officers' Association of the United States and Canada. Annual convention. Executive Director, Carl H. Chatters, 850 East 58th Street, Chicago, Ill.

SEPTEMBER 15-17.—AURORA, ILL. (350)
Illinois Municipal League. Annual convention. Secretary, A. D. McLarty, 500 East Capitol Avenue, Springfield, Ill.

SEPTEMBER 20-22.—SANTA FE, N. MEX.
American Water Works Association—Rocky Mountain Section. Annual convention. (La Fonda Hotel.) Secretary-Treasurer, B. V. Howe, 437 State Office Building, Denver, Colo.

SEPTEMBER 20-21.—VIRGINIA BEACH, VA. (500)
League of Virginia Municipalities. Annual convention. (Cavalier Hotel.) Executive Secretary, Morton L. Wallerstein, 902 Travelers Building, Richmond, Va.

SEPTEMBER 27-30.—FORT WORTH, TEXAS.
American Institute of Park Executives and the American Park Society. Annual convention. Executive Secretary, Will O. Doolittle, Box 422, Tulsa, Okla.

SEPTEMBER 27, WEEK OF.—WHITE SULPHUR SPRINGS, W. VA.
Illuminating Engineering Society. Annual convention. (Hotel Greenbrier.) General Secretary, D. W. Atwater, 29 West 39th Street, New York.

OCTOBER 4-7.—BALTIMORE, MD.
International Association of Chiefs of Police. Annual convention. Secretary, George Black, Wilmington, Del.

OCTOBER 5-7.—NEW YORK.
American Public Health Association. Annual meeting. Executive Secretary, Dr. Reginald M. Atwater, 50 West 50th Street, New York.

OCTOBER 10-15.—PHILADELPHIA, PA. (500)
American Prison Association. Annual congress. (Hotel Bellevue-Stratford.) General Secretary, E. R. Cass, 135 East 15th Street, New York.

OCTOBER 10-12.—KANSAS CITY, MO. (100)
Institute of Traffic Engineers. Annual meeting. (Hotel President.) Secretary-Treasurer, Harold F. Hammond, National Bureau of Casualty and Surety Underwriters, 1 Park Avenue, New York.

OCTOBER 11-14.—AUSTIN, TEXAS.
American Water Works Association—Southwest Section. Annual convention. Secretary-Treasurer, Lewis A. Quigley, 3320 West Berry Street, Fort Worth, Texas.

OCTOBER 11-15.—KANSAS CITY, MO.
National Safety Council. Annual congress. Managing Director, W. H. Cameron, 20 North Wacker Drive, Chicago, Ill.

OCTOBER 18-21.—NEW ORLEANS, LA.
International City Managers' Association. Annual convention. Executive Director, Clarence E. Ridley, 850 East 58th Street, Chicago, Ill.

OCTOBER 19-22.—OKLAHOMA CITY, OKLA.
International Association of Fire Chiefs. Annual conference. (New Municipal Auditorium.) Secretary, James J. Mulcahey, 16 Franklin Avenue, Yonkers, N. Y.

OCTOBER 20-23.—SACRAMENTO, CALIF.
American Water Works Association—California Section. Annual convention. (Senator Hotel.) Secretary-Treasurer, Carl M. Hoskinson, Chief Engineer, Division of Water, Sacramento, Calif.

OCTOBER 20-23.—NEW YORK. (200)
National Association of Assessing Officers. Annual convention. Executive Director, Carl H. Chatters, 850 East 58th Street, Chicago, Ill.

OCTOBER 25-28.—BALTIMORE, MD. (600)
National Tax Association. Annual conference. (Lord Baltimore Hotel.) Secretary, W. G. Query, Chairman, South Carolina Tax Commission, Columbia, S. C.

OCTOBER 27-29.—WHITE SULPHUR SPRINGS, W. VA.
American Institute of Steel Construction, Inc. Annual convention. (Greenbrier Hotel.) Secretary, V. G. Iden, 200 Madison Avenue, New York.

NOVEMBER 4-6.—OMAHA, NEBR.
American Water Works Association—Missouri Valley Section. Annual meeting. (Fontenelle Hotel.) Secretary, Earl L. Waterman, University of Iowa, Iowa City, Iowa.

Announcing A New 300-Gallon Kettle

This No. 84-HD6 fills a need felt by many maintenance departments for an economical heater that will heat large quantities of any type of bitumen quickly. A kettle that is made along modern lines—that is not too heavy, yet built to stand years of hard use on all kinds of work.

The actual capacity of this unit is approximately 350 gallons. It has Littleford "double heat circulation" and the same inverted V type screen in the reservoir that has proven so successful in other sized models of the favorite Littleford No. 84-HD Heater.

Use this kettle with the new Littleford Motor Spray Attachment for turning out plenty of work—or the Hand-Driven Handspray.

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The Littleford No. 84-HD6.

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LITTLEFORD BROS. CINCINNATI, OHIO

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New Truehedge Columnberry-Common Barberry

COMPARE THESE 2-YEAR OLD PLANTS

Truehedge Columnberry is an upright type of barberry. Trimming is almost eliminated, saving much labor. Write for full details. Free Booklet.

HENRY C. MUSKOPF, Landscape architect says: "For an effective narrow, naturally upright growing plant, we know of none to equal its distinctiveness."

ROMAINE B. WARE, nationally-known Horticultural Editor and Writer says: "I have visited in a dozen states since the first of June and everybody seems to have a good word for Columnberry."

PAUL A. WELLS, Syracuse City Forester says: "It would appear that you have developed a very fine plant from the standpoint of appearance, good foliage and color, and low maintenance cost, and we will not hesitate to use more as the need rises."

L. E. JERMY, Chairman, Cleveland Section, A. S. M. E. says: "Trimming is entirely unnecessary, and it seems as though the characteristic of these columnberries in throwing shoots upright rather than sideways will render only very infrequent, if any, clipping desirable.

THE COLE NURSERY CO. (*Est. 1881*)

PAINESVILLE, OHIO

Wholesale catalog on request.

"Everything That's Good and Hardy"

News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

Galvin New Sales Mgr. of Caterpillar Tractor

E. R. Galvin was appointed General Sales Manager of Caterpillar Tractor Co., effective March 1. He is one of the most widely known men in the tractor industry and in industrial sales circles generally. Formerly General Sales Manager of Cleveland Tractor Co., he became a District Representative for Caterpillar in 1928. Shortly thereafter he became Sales Manager in charge of the Eastern Sales Division, with headquarters at Peoria. In January, 1936, he was appointed Assistant General Sales Manager, from which position the new appointment is a further step of advancement.

E. R. GALVIN, GENERAL SALES MGR., CATERPILLAR TRACTOR COMPANY

Underwriters Report on Transite Pipe

Johns-Manville Corporation, 22 East 40th Street, New York, has been notified that the Underwriters Laboratories, Inc., have listed Transite pressure pipe and couplings. Their report covers Transite Class-150 pressure pipe and couplings in sizes from 4 to 24 inches, inclusive, for use in underground water service where the working pressure does not exceed 150 pounds per square inch.

A brief summary of the conclusions drawn in the 80-page report makes the following statement:

"From the conclusions drawn, it will be noted that it is practical to handle and ship the pipe and couplings and install and maintain them in underground piping systems; that systems constructed of them are not subject to rapid deterioration; that the pipe and couplings are capable of withstanding all reasonable stresses to which they are likely to be subjected under ordinary service conditions; that they are reliable in service; that they are uniformly made and can be uniformly assembled."

The complete report, full information about which may be secured from Johns-Manville direct, was compiled after months of thorough investigation and tests of this asbestos-cement product, which has a 20-year record of service in Europe and which, since its introduction by Johns-Manville in 1928, has been installed in many municipal and industrial water distribution systems in the United States and Canada.

Police Signal and Telephone Cable

Latox police signal and telephone cables, with conductors paired or quadded, are well fitted for telephone service. They combine the advantages of rubber insulation with talking qualities which closely approach those of the dry paper insulated cables ordinarily used for telephone service.

The fundamental requirement of a telephone circuit is that it must talk satisfactorily. It must be capable of transmitting speech easily and without undue effort on the part of the users. To accomplish this there must be: (1) a sufficient volume so that speech may be received with adequate loudness; (2) freedom from distortion so that speech will be intelligible; (3) freedom from extraneous interference.

The talking quality of a telephone cable is inversely proportional to its transmission loss; that is, the higher the transmission loss, the poorer the talking quality of the cable. Transmission loss in a telephone cable is controlled by several characteristics. The larger the wire, the smaller the ohmic resistance, and therefore the less the transmission loss. The lower the mutual capacitance between conductors of a pair, the lower the transmission loss. The mutual capacitance of any given size of wire depends upon the specific capacity of the insulation material and the thickness of insulation. The higher the telephone frequency, the greater the transmission loss. It is usual to calculate and measure losses at 1,000 cycles. The higher the inductance, the lower the transmission loss, since it neutralizes the effect of capacity. For normal cables which are not deliberately loaded with inductance, the effect of inductance is negligible.

The unit of transmission loss in a telephone cable is the decibel. Good talking qualities may be obtained over cables that have as high a transmission loss as 20 decibels for the entire length. For example, No. 19 Latox cable with a loss of only 0.292 decibels per 1,000 feet could be used in lengths up to 68,500 feet without exceeding 20 decibels total loss.

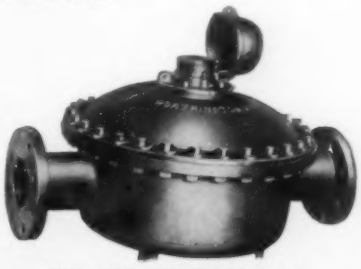
Paper insulation has a slightly lower specific capacity than Latox insulation, and hence conductors insulated with Latox must be somewhat larger to have the same transmission loss. A No. 20 Latox is just about the equivalent to No. 22 paper in transmission loss.

Many of the inherent difficulties which accompany the installation of paper-insulated telephone cables are absent when Latox cables are used, according to the manufacturer, the Simplex Wire & Cable Co., 79 Sidney Street, Cambridge, Mass. It simplifies the installation and reduces installation and maintenance costs. Latox-insulated conductors can be stripped easily and spliced like ordinary rubber-covered wire. Potheads, terminal boxes and stubs required for paper cable are unnecessary, and the expense involved in their purchase and installation is avoided.

New Bulletin on Heavy-Duty Disc-Type Water Meters

Three- and 4-inch heavy-duty disc-type water meters are described in a new Bulletin, M-975-B34, issued by the Worthington-Gamon Meter Co., Harrison, N. J. These units conform to the standard specifications for cold-water meters adopted by the American Water Works and New England Water Works Associations and are recommended for hotels, apartment buildings, mercantile establishments, large office buildings, manufacturing plants and other locations where the demand is too high for the usual type of disc meter.

These meters are available with registers indicating gallons, cubic feet or metric measure, and are arranged for either circular or straight reading. A special feature of the straight-reading register is the rubber-bushed pinion shaft which prevents metal-to-metal contact. The casings are made from a bronze composition with a high copper content, which makes the meters particularly adapted for water-works service under all conditions.



THE WORTHINGTON-GAMON HEAVY-DUTY DISC-TYPE WATER METER

HAZARD

ARMORTITE CABLE

Non-Metallic Armored

All airport wiring is of vital importance but must be underground. Hazard Armortite Cable is ideal for this purpose. It is easy to install and connect because of its flexibility, light weight and simple method of splicing and taping. It has been used in many of the country's largest airports for boundry lighting, flood lighting, beacons and obstruction lighting. U. S. Department of Commerce Aeronautics Bulletin "Airport Rating Regulations" approves the use of non-metallic armored cables for airport wiring.

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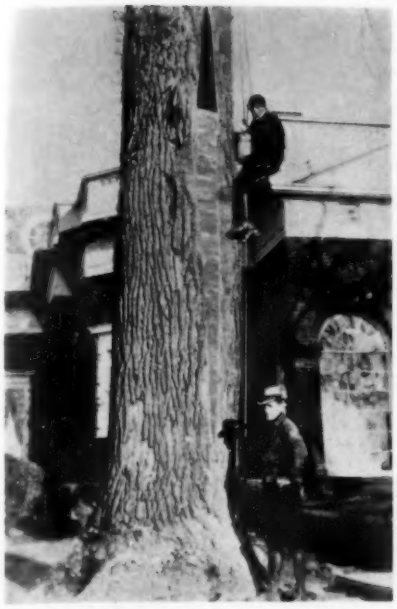


SEALING A CAVITY IN A TREE WITH RUBBER
This is one of the original trees planted by Thomas Jefferson at his Monticello home well over a century ago

Tree Surgery with Rubber

A very interesting example of the skill and ingenuity employed by tree surgeons in preserving and maintaining tree life is found in the project at Monticello, the famous Virginia home of Thomas Jefferson. Surrounding this national shrine is a group of beautiful trees which, now over a century old, are rapidly deteriorating owing to rot. To combat this condition, a new form of tree surgery is being used, employing rubber for sealing the cavities after they have been thoroughly scraped of all decayed wood.

George Van Yahres, an eastern tree surgeon, began a search several years ago for a material which would be more adaptable to nature's requirements. He first tried cork, since that material most nearly simulated wood. Although possessing most of the desired qualities, it was soon found that this material had to be specially waterproofed and treated to withstand the elements, insects and birds. Mr. Van Yahres then started experiments with rubber.

The special rubber which has been developed by the B. F. Goodrich Co., Akron, Ohio, is made up in strips about 1½ inches wide by 1¼ inches thick. After the decay has been removed from the tree, the cavity is walled up with these rubber strips much in the same manner as brick is laid. Their length is made slightly greater than the width of the cavity, so that the ends of the strips will compress against the sides of the cavity to give a tight seal. The strips are laid one upon another, each being cut to exactly fit the contour of the cavity. As the wall of rubber is built up, the remainder of the space back of it is filled with a cementitious mixture designed to absorb all moisture and not shrink. The inside surface of the strips contains a series of small double dovetails which are embedded in the cement to prevent their pulling away from the filling.

This rubber protection provides a simple but permanent seal. The flexibility of the material permits it to sway and twist with the tree without cracking and allows natural growth of the bark over the filled area.

Protective Coatings for Steel Water Lines

Suggested specifications for coating and lining steel water lines with Barrett special water-works primer and enamel, together with a very helpful discussion of the methods of cleaning the pipe, priming, applying the enamel, shielding or wrapping the exterior, handling coated pipe, and the protection of exterior surfaces of exposed steel pipe, are found in a specially bound brochure which may be secured gratis by any water-works or other public officials, as well as engineers, from The Barrett Co., 40 Rector Street, New York. This literature also contains excellent illustrations of installations, handling of pipe and testing.

Remote Control of Variable Speed Units

U. S. Electrical Motors, Inc., 200 East Slauson Avenue, Los Angeles, Calif., has announced a new development in the U. S. Varidrive motor. The operator can vary the speed of the compact Varidrive unit over a wide range by turning the handwheel at a remote control station. In this unit the remote control is hydraulic and provides a smooth regulation of speed and an infinite number of speeds within the range provided. The liquid at the remote-control station cylinder is forced through copper tubing to the cylinder at the variable speed unit itself, and the movement of this cylinder changes the speed.

A mechanical remote-control unit for the Varidrive motor was described on page 111 of the January, 1937, issue of THE AMERICAN CITY.

All-Steel Grandstands for Play Fields

All types of athletic fields, race tracks, arenas, auditoriums and theaters require some type of steel construction for handling the crowds. Pittsburgh-Des Moines steel grandstands, made by Pittsburgh-Des Moines Steel Co., 3421 Neville Island, Pittsburgh, Pa., are built in standard sections, 18 feet long by 10 rows deep, each section seating 120 people. A stand may be any number of sections long by any number of sections deep, and its seating capacity may be increased from time to time, double-decked if necessary and roofed over as desired for the protection of spectators.

Substantial handrails surround the stand and may also be installed to divide it into sections. Wood seat planks supported on brackets are securely bolted down to the deck. Aisles, at proper intervals, extend from front to back, with walkways along the front or back if necessary. Entrance and exit are accomplished by means of stairs or ramps at the lower end of each aisle, or through wells in the stand.

The steel plate deck is built to shed water, hence the space under the stands may be utilized for dressing rooms, toilet facilities or storage. In a number of instances masonry walls have been built along the ends and back so as to fully enclose the space under these permanent stands.

The first cost of the stands is reported to be low, and they have a high salvage value. They are assembled by means of bolts so they can be dismantled and re-erected at another location. An occasional coat of paint is the only maintenance necessary to keep them in prime condition.

A CLOSE-UP OF A PITTSBURGH-DES MOINES STEEL GRANDSTAND SHOWING THE UPPER SIDE OF THE DECK, THE SEATS AND THE HANDRAIL

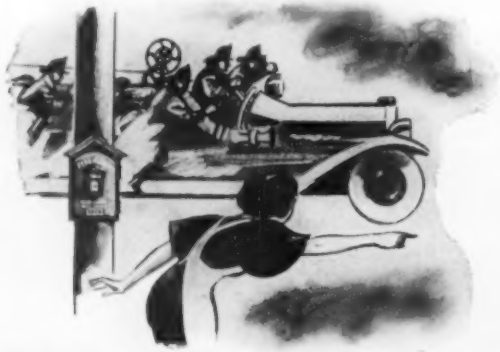
Combat Accidents, Crime, Fire, with this 4 point

SAFETY PROGRAM

People are aroused by today's appalling losses of life and property due to *preventable* traffic accidents, crime and fire. They're demanding SAFETY!...Give them the protection of *adequate, modern* public safety equipment. Its cost is only a tiny fraction of the terrible costs it prevents . . . Graybar can help you with unbiased advice...dependable equipment. Write us for full information.

1. Better Street Lighting... Despite greatly reduced traffic, 40% of all accidents occur at night. Crime flourishes in the dark... That's why better street lighting pays for itself. Call on Graybar's lighting specialists to help you with details...choice of equipment.

2. Modern Traffic Control... Meet perplexing traffic problems with *up-to-date* traffic control equipment. Saves time—helps prevent accidents. Steadily increasing *future* traffic must be considered. Why not let Graybar's experts offer suggestions?



3. Efficient Fire-Alarm Systems... Tremendous advances in fire-alarm equipment have been made in recent years. A *complete,* interesting booklet describing present-day equipment is available to you. You'll want to have it. Write us—ask for it.

4. Police Radio... More and more communities are turning to Police Radio to speed up the long arm of the law. Our experience is at your disposal—an experience based on helping scores of other cities solve their problems. Write for booklets—data.

GraybaR *Electric Company*

OFFICES IN 81 PRINCIPAL CITIES. EXECUTIVE OFFICES: GRAYBAR BUILDING, NEW YORK, N. Y.

When you write for that catalog, kindly mention THE AMERICAN CITY

THE NEW WESTINGHOUSE DRAWBRIDGE MARKER

New Standard Marker for Drawbridges

The Westinghouse standard marker for drawbridges, deck bridges, pontoon bridges, jackknife bridges and retractile bridges complies with U. S. Lighthouse Bureau requirements. It is constructed with a 360-degree white Fresnel lens, using red convex panels set in two opposite sides, and green convex panels set in the intermediate sides. The light from each panel covers approximately 60 degrees of the horizon, but not more than 60 degrees.

The base, lens ring, cover and panel frames are cast of non-corrosive silico-aluminum. The Fresnel lenses are seated on cork gaskets and sealed in with plastic compound. The cover seats on a felt gasket, sealing the unit against dust and weather. The color panels seat on felt gaskets and are held in place by spring bronze clips. The medium screw porcelain socket is mounted on a shock absorber and uses a 50-watt clear lamp or a 60-watt traffic signal lamp. All cast aluminum parts are finished with metallic aluminum paint. All external fittings are brass or bronze nickel-plated except the wing screws, which are of drop forged steel, heavily cadmium-plated. All internal fittings are steel, cadmium-plated. The mounting flange is finished with two coats of black weatherproof paint.

Perkins Heads Koppers Western Gas Division

W. F. Perkins, Vice-President in charge of the American Hammered Piston Ring and Bartlett Hayward Divisions of Koppers Co. and its subsidiary, The Maryland Drydock Co., all in Baltimore, Md., also has been placed in complete charge of the company's Western Gas Division in Fort Wayne, Ind., which supplies the public works and manufactured gas fields.

The Western Gas Division does steel plate construction, makes grey iron and semi-steel castings, cast iron, flanged, riveted and steel pipe, steam accumulators, blast gates, gear and motor-operated floor stands, fire hydrants, hydraulic systems, and water, gas and air valves.

A New Chemical Hose

A new feature has been incorporated in the construction of "White Anchor," "Fire Extinguisher" and "Sentry" brands of chemical hose made by The B. F. Goodrich Co., Akron, Ohio. This new feature is said to practically eliminate twist.

These brands of hose are of the wrapped construction type, and freedom from twist is obtained through a patented method of laying up the fabric. While ordinary chemical hose will twist as much as 8 turns under 400 pounds pressure, recent tests of Goodrich hose under the same pressure showed slightly less tha one-quarter turn, according to the manufacturer.

"White Anchor" and "Fire Extinguisher" brands are available in ¾- and 1-inch sizes, while "Sentry" is offered in sizes ranging from ½- to 1½-inch. All are supplied in 50-foot lengths with capped ends.

Welding Replaced Jail Bars

The bars of an Ohio county jail near

REPLACING BARS IN AN OHIO JAIL BY STABLE-ARC WELDING

Toledo were broken through by three criminals after long hours of hard work with a smuggled hacksaw blade. They were replaced, however, in a few minutes by electric arc welding. The criminals, jailed for grand larceny, obtained the hacksaw blade by means of chewing gum attached to a piece of string, by which they drew the blade into the cell, according to a report of the Lincoln Electric Co., Cleveland, Ohio, whose welding outfit was used for replacing the bars.

A New Heating Kettle for Tar and Asphalt

A new style tar and asphalt heating kettle has just been added to the Littleford line. It is built along lines similar to the L-B No. 84-HD model with double heat circulation and a screened reservoir. It is rated at 300 gallons, although the unit has an actual capacity of 350 gallons. It weighs only 2,250 pounds on pneumatic tires, a feature that road repair gangs will appreciate.

The overall dimensions are 135 x 70 inches; the loading height above the ground is 59 inches; it is equipped with 12-leaf semi-elliptic springs and Timken roller bearings. Full information on this new heating kettle can be secured by writing to Littleford Bros., 500 East Pearl Street, Cincinnati, Ohio.

Easily Handled Cutter for Weeds and Grass

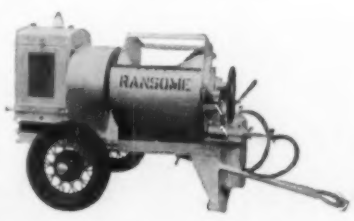
The Detroit motor scythe, made by the Detroit Harvester Co., Detroit, Mich., was developed particularly for keeping grass and weeds cut in pathways, along sidewalks in parks, and on undeveloped property in outlying sections of cities, for trimming shoulders and cutting in close places such as under guard fences and around the head walls of culverts and ditches on highways, and for trimming around hangars and the most frequently used portions of landing fields at municipal airports.

It has a 36-inch sickle, driven by one-cylinder, two-cycle gasoline motor, and is mounted on a free-running 30-inch wheel, allowing it to be backed up, pivoted sharply, or tilted up or down slopes similar to a wheelbarrow. All wearing parts on the cutter bar are renewable, and while the total weight of the motor scythe is 135 pounds, it is so balanced that the operating or lifting weight is but 15 pounds.

Bituminous Mixers for Hot and Cold Patches

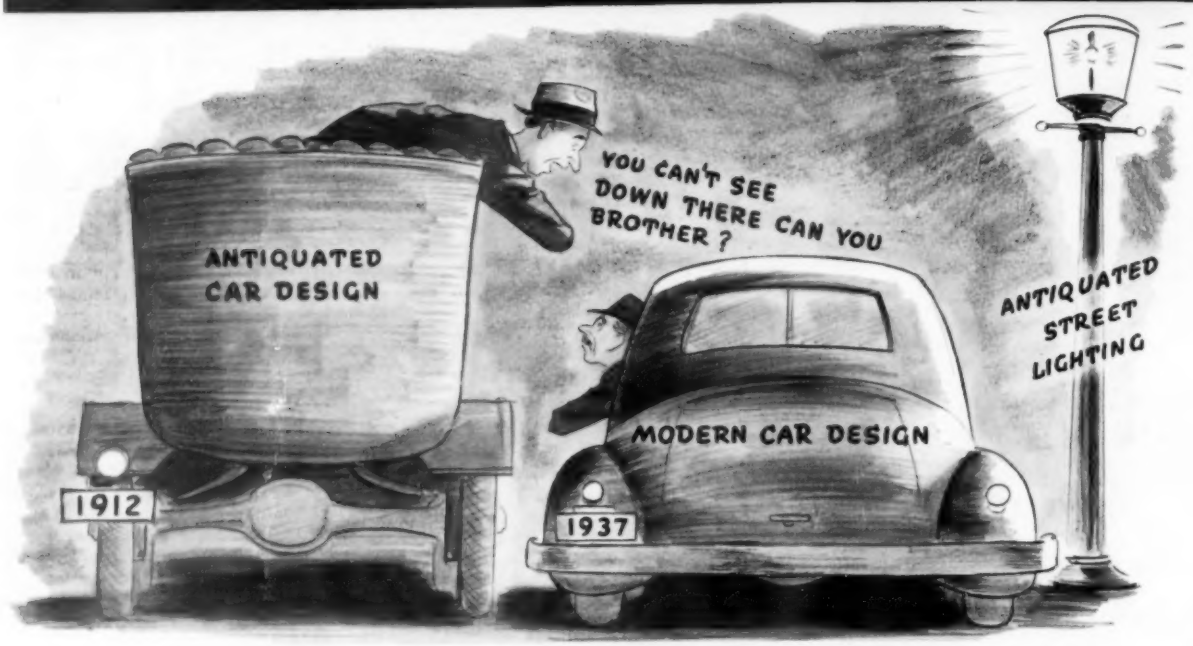
Ransome Concrete Machinery Co., Dunellen, N. J., has recently placed on the market a 6- and 10-cubic-foot mixer for handling hot or cold patch bituminous mixtures for street maintenance, driveways, airport runways, walks and playgrounds. With this mixer it is possible to heat and obtain a thorough and uniform mix of sand, pit-run gravel, pea gravel, and crushed rock, as well as any patented bituminous patching material. To thoroughly mix the material, two large steel paddles using the original Ransome method of kneading and stirring revolve at 26 rpm. The drum is designed for easy cleaning, and the controlled heat is supplied by a 10-gallon capacity fuel tank and improved type Littleford burner.

Both sizes of mixer are available on trailer mountings with steel or pneumatic tired roller bearing wheels with coil springs. The mixer can be easily moved from job to job by means of a handling and pulling bail with a large handle, so that a man can put two hands into it when pulling it into position.



RANSOME'S NEW BITUMINOUS MIXER

TIMES HAVE CHANGED!



Recent experiments reveal that a driver of a 1912 relic on the night-lighted streets of today would be less likely to have an accident than the driver of a modern car. From his higher perch above the street he could actually *see better* under existing street lighting systems.

This fact emphasizes the importance of keeping street lighting practice in step with modern and future motorcar trends . . . a relationship that now demands the serious consideration of everyone interested in reducing nighttime traffic fatalities.

Consider this one fact. Driver's eyes today are barely four feet above the street. This means that proper visibility at night must now come from a brighter road surface, a lighted surface that produces the effect of a lighted background for every object between the driver and the road. While silhouette vision through surface illumination has always been an accepted street lighting practice, it must now be achieved through an entirely new technique . . . a technique that not only takes into consideration the modern design of the motorcar, but also the varying conditions of the street, wet and dry, color and texture.

WESTINGHOUSE REFLECTOLUX

Such a street lighting system will meet modern needs for many years, and can be simply accomplished through an entirely new type of installation . . . and an entirely new type of luminaire that *directs* the light up and down the street . . . a luminaire such as the new Westinghouse Reflectolux designed specifically with a shielded light source for surface illumination and silhouette vision.

Consequently, before making any definite plans for improving your present street lighting system . . . before making any investment . . . it will pay you to get complete details of this new street lighting technique, and the type of installation and equipment required.

Westinghouse offers you an advisory service that will acquaint you thoroughly with the requirements of this new system for an individual problem, or for your general information. We urge you to take advantage of this service by writing, Westinghouse Electric & Mfg. Co., Lighting Division, Edgewater Park, Cleveland, Ohio.

WHEN YOU THINK OF *Lighting* THINK OF

Westinghouse

New Bronze Alloy for Water Valves

Among the new applications for bronze of interest to water-works engineers and to contractors are the manganese bronze tunnel liners and gate guides and Koppers D-H-S bronze gate seals and gate seats required in emergency gate tunnels and shafts for Fort Peck Dam tunnels, Fort Peck, Mont. The U. S. Army Engineer Corps, which draws up the specifications for these bronze alloys, decided to use bronze when it was found that any additional costs would be wiped out in a few years by the permanent elimination of costly and troublesome upkeep of underground metal construction.

This entirely new utilization of bronze was made possible by a new bronze alloy with higher physical properties, a development of the Koppers Company's Bartlett-Hayward Division in Baltimore, Md. Other economies, made possible by a bronze alloy of such high ductility, hardness and strength, open many more avenues of use where replacement and upkeep are serious factors for consideration.

Tippins Joins Activated Alum

Ben F. Tippins, formerly Superintendent of Water Works and Sewage Disposal at Daytona Beach, Fla., has been appointed Plant Superintendent of the new Activated Alum plant at Curtis Bay, Baltimore, Md. Mr. Tippins has a long record of service in water treatment, having been Superintendent of the Daytona Beach softening plants for 17 years, operating three separate plants each of a different type.

The new plant of the Activated Alum Corporation will be placed in production April 15, 1937, manufacturing not only Activated Alum, known also as Black Alum, but also ferric sulphate of alumina, Coag, Regular Commercial Sulphate of Alumina and highly refined alum for the specialized pulp and paper trades.

Ben Tippins was the first water-works superintendent to use powdered activated carbon in the pre-treatment at a water-softening plant for odor control. The results of these early experiments in 1931 resulted in the change in treatment practice of adding carbon to the clarified water only. This changed to adding carbon to the coagulated water, sweetening the sludge and filter sand, and was called "stabilization of sludge," which is the practice now in most general use. From these experiments came Black Alum, which Tippins also first introduced.

BENJAMIN F. TIPPINS

Personnel Changes in U. S. Pipe & Foundry Co.

The United States Pipe & Foundry Co., Burlington, N. J., has announced that Carl M. Brown, formerly Sales Agent at Boston, Mass., has been appointed Assistant Western Sales Manager at Chicago to replace C. E. Braun, who has resigned that position because of ill health. Mr. Braun will remain, however, in the Chicago sales force. R. E. Sweeney, formerly of Buffalo, N. Y., has been appointed Sales Agent at Boston, and S. H. Svenson, formerly of the Chicago office of the U. S. Pipe & Foundry Co., has been appointed Sales Agent at Buffalo, N. Y.

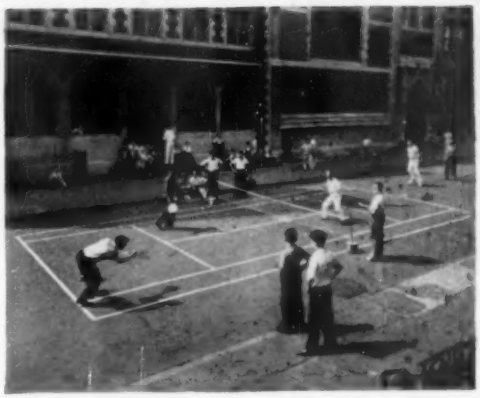
Trotman Joins R-C Blower Corporation

J. B. Trotman, for many years associated with Goulds Pumps, Inc., has been appointed Manager of the Turbine Pump Division of Roots-Connersville Blower Corporation, at Connersville, Ind. This company has built turbine pumps for the past five years and is offering a wide range of sizes and types in various constructions for industrial applications. The Type "T" pump includes, among other features, seal-type packing glands which rotate with the shaft, eliminating stuffing-box leakage. There is only one moving part, a balanced impeller. The manufacturer also stresses the ability of these pumps to handle non-abrasive liquids at high heads without the use of multi-stages.

Paddle Tennis for City Playgrounds

Paddle tennis is one of the fastest-growing low-cost games for city playgrounds and schools. It affords the same opportunity for skill, competition and exercise as lawn tennis, for the special paddles and special balls are designed for the distances of the smaller courts. The base line is 18 feet long, and the total length of the court is only 39 feet.

The Paddle Tennis Co., 285 Madison Avenue, New York, has prepared a complete paddle tennis tournament outfit for either singles or doubles tournament play which contains down to the last detail everything needed to put on a tournament, including the championship medals. There are entrants' buttons, score cards, paddle tennis equipment, rules, and the three gold championship medals. These outfits are particularly valuable for use in summer on municipal playgrounds. Any level surface of clay, concrete, wood or grass will serve as the court, which is only one-quarter the size of the standard tennis court.



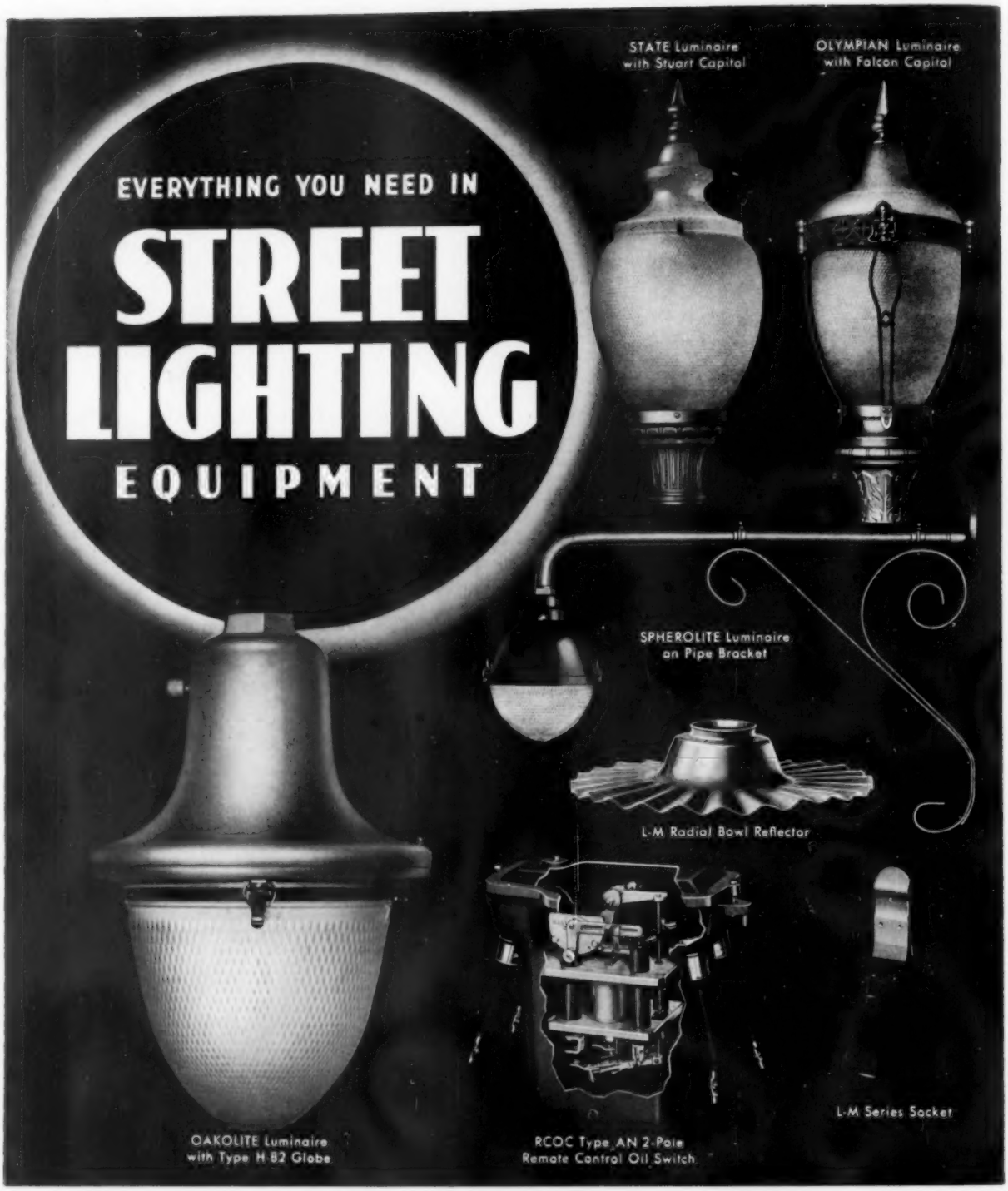
THE SEMI-FINALS OF A PADDLE TENNIS TOURNAMENT IN THE STREETS OF NEW YORK

New Vacuum-Type Unit for Chlorination Service

A new line of chlorinators with capacities of ½-pound to 1,000 pounds of chlorine gas per 24 hours has been announced by Everson Manufacturing Co., 634 West Lake Street, Chicago, Ill. A feature of this new chlorinator for the sterilization of drinking water and swimming pools is the Everson Rota-Meter, a gas-flow measuring device that is reported to be accurate within one per cent. The Rota-Meter itself consists of a silver rotor supported by a column of gas in a tapered calibrated tube. Shaped like a small top, the rotor spins by means of flutes or fins suspended in the calibrated tube, its position on the scale indicating the rate of flow.

The safety features of this line include a double glass case and water-sealed bell jar over the Rota-Meter, automatic venting devices, and automatic vacuum break and non-corrosive valves and lines.

THE EVERSON CHLORINATOR



● Whether your illumination problem involves downtown streets, a residential area, a playground or highway . . . L-M Street Lighting Equipment is the sound solution. L-M Illuminating Engineers will gladly cooperate with you in selecting and planning your installation. Write to South Milwaukee, Wisconsin, for the L-M Street Lighting Catalog and Glassware Bulletin, LMB 2361.

LINE MATERIAL CO.

Outdoor Lighting

A Section of THE AMERICAN CITY
Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks, and the Floodlighting of Public Buildings

Public Tired of Dull Street Lighting

By CLYDE R. YATER
City Engineer, Shelbyville, Ind.

STREET lighting in Shelbyville has been restored to 1932 brilliance because the people have had enough of a 50 per cent curtailment and the Public Service of Indiana has helped them with a schedule that will reduce the earlier bills by $4,000.

The Indiana Legislature passed a law in 1932 limiting the tax rate on all real-estate and personal property to $1.50 per $100 of tax valuation for all governmental purposes; in other words, $1.50 covers state, county, township and city taxes. At that time the city of Shelbyville had a contract with the Public Service Co. of Indiana for $19,000 per year for electricity. Shelbyville has a tax valuation slightly in excess of ten million dollars; therefore, when the budget was compiled for the purpose of determining the tax rate for 1933, and all items were considered, including the levy for street-lighting purposes, it was found that our tax rate would be much in excess of the $1.50 limit. In fact, after all matters were ironed out, it left us only 42 cents out of the $1.50 which could be levied as city taxes. The tax levy recommended to the County Tax Board, as provided by law, was therefore much in excess of the $1.50 limit imposed. The Tax Board, interpreting the law literally, cut all levies, including the light levy, so that the amount of money raised for street-lighting purposes would be approximately $9,000.

Because of this situation, the Public Service Co. of Indiana entered into an amended contract with the city, in which about 50 per cent of our lights were discontinued so that the contract would be in line with the amount of money available to pay the bills. Since that time, because of public demand, the levy has been increased to $1.20 for city taxes only, and allowed by the Tax Board, so that we can restore the schedule as it existed previous to 1932.

Our lighting contract with the Public Service Co. would have expired in 1937, so when the proposition was taken up with them about restoring this service, they presented a new proposition which provided that if we renewed the contract for five years at this time, a new set of rates would be placed in effect which would reduce our annual rate approximately $4,000.

Investigation of the cable and of the entire ornamental system disclosed the fact that since it had ceased to be in operation the system had deteriorated, particularly the underground cables, and for satisfactory service these would have to be replaced. Therefore, with the $4,000 anticipated saving in the light contract, we felt we could purchase necessary material, and by getting a WPA project through for the labor, we are revamping the entire ornamental system, which includes relocating all light standards 18 inches back from the curb, laying new cable, and new 5-inch fiber conduit. We expect to have all work completed in about 50 days. We are adding no new lights, but are restoring the system to a first-class condition and placing in service all lights in use in 1932.

Comparing the traffic accident situation in 1932 and since that time, we find an increase in accidents, and no doubt part of this was due to insufficient lighting.

Mercury Vapor in Austin's Towers

By WALTER SEAHOLM
Electrical Superintendent, City of Austin
and
J. H. WATTS
Westinghouse Electric & Manufacturing Co.

ONE of the first questions asked by newcomers to Austin is the "why" and "wherefore" of the tower lights whose 165-foot tall steel skeletons dot the area of the entire city. Anyone who has come into Austin at night from north or south will understand why these towers excite interest.

What do the citizens think of them?

As answer, in a cyclone some years ago one tower was blown down. The city replaced the tower with 30 street lights, but the residents in the area got up a petition; they wanted their light tower. The petition was signed by persons residing as far as four miles away who claimed they could read a newspaper by the light from the tower before it was blown down.

The people of Austin relate many interesting stories about these towers, which have been in use since 1895. One early newspaper prediction, written before the installation was completed, told how the corn in people's gardens should grow to great heights, for under the lighting it would grow both day and night. Saws would be needed, it was said, to cut down the stalks.

First lighted with carbon arcs, the towers were purchased by the city officials at that time to give general street illumination, at a cost of $50,000 for the towers. At the time of installation there were 31

AUSTIN, TEXAS, HAS 29 OF THESE 165-FOOT TOWERS

towers, and all but two are still in service. With the introduction of modern-type street lighting that has been installed right along, these towers, besides lending distinction to the city, continue today to do their part in making Austin one of the best generally lighted cities in the country.

At the top of each 165-foot tower are six lighting units which have been putting forth light nightly since 1895. As far as it has been possible to learn, this is the only city in the United States that still has tower street-lighting in use. Back in 1895, this was the manufacturer's guarantee: "We guarantee that with an ordinary pocket watch you will be able to read the time on the darkest night within a circle of 3,000 feet, using the base of the tower as the center of the circle."

Incandescent lamps later replaced the carbon arcs and have served to furnish light until now.

After investigating various types of lighting, the city officials of Austin decided that as a portion of their part of the program to commemorate the Texas Centennial, they would convert the tower mazdas to mercury-vapor lamps.

As a point of historical interest in the development of street lighting, the mercury-vapor lamps were lighted on the demonstration tower May 6, 1936, exactly 41 years to the day after the first tower was lighted with carbon arcs. Reactor-capacitor units and minor parts were all that was necessary for the conversion. Without increasing the consumption of electrical energy, twice the amount of light now is had from each of the 29 towers, equipped with six 400-watt mercury vapor lamps. No incandescent light is used in conjunction with the mercury vapor.

The general effect is that of a very bright moonlight night, giving practically the equivalent effect on streets and sidewalks for blocks in the vicinity of the tower. Pilots who fly the night mail and government flyers who pass over the city at night state that they have never mistaken the identity of the well-lighted city of Austin. The police records of the city show that the percentage of burglarized homes in the vicinity of the towers is negligible.

Current Averages $28 per Unit in Middletown, N. Y.

IN Middletown, N. Y. (22,000 population), in 1933, the street-lighting system, exclusive of the ornamental element of it, was entirely redesigned by Charles R. Vannenman, Inc., Albany, N. Y., in conjunction with the Rockland Light and Power Co. engineers. Their master plan was adopted by the city, and a 10-year contract was signed for 572 units of 60 to 1,000 candlepower, at an annual cost of $16,500, an average of $28.85 per unit.

Additions were provided for at the following annual rates: 60 cp at $15; 100 cp at $21; 250 cp at $35; 400 cp at $53; 600 cp at $65; 1,000 cp at $91. For extensions, line charges were established of 4 cents per line foot on existing poles, and 6 cents per line foot where new poles are required.

This installation was regarded as the absolute minimum, and during the last three years it has been enlarged by nearly half. Our total system now consists of the following units:

Number	Candlepower
304	60
270	100
96	250
34	400
10	600
32	1,000
87	200-watt (2 lights each)
34	100-watt (2 lights each)

The last two items of 87 and 34 units of two lights each are on ornamental poles. These, including conduit, are maintained by the city. All other units are owned and maintained by the lighting company, as is the cable in the ornamental system.

The present system costs about $24,000 per year, or $370 per mile of our 65 miles of streets, or $1.09 per capita. Our policy on street lighting will continue to be that of giving the people all we can for the dollar which they give us.

CHARLES C. CHAPPELL,
Mayor, Middletown, N. Y.

The More You Spend, the Fewer You Kill

IN an appendix to the new I. E. S. Code of Highway Lighting, published in the February *Transactions* of the Society, R. E. Simpson shows the following results of an extensive survey:

Expenditures per Capita for Street Lighting	Night Accidents per 100 Day Aicidents
$1.50	130
1.00 to $1.50	165
.50 to 1.00	205
Less than $0.50	265

Dim Streets Belong with Horses and Buggies

WHY is it that on the same highways, with the same conditions, same automobiles, same drivers, the same traffic regulations, and even with a smaller volume of traffic, the accident rate is higher at night? What is the remedy?

Insufficient lighting is the answer to the first question.

Fixed lighting along our highways is the answer to the second question. If proper studies are made, the same general conditions will be found that were found on Detroit thoroughfares and described here in March. It was found that 100 fatalities had occurred at night on nine sections of streets in two years, while only 12 fatalities had occurred during the day. The accident rate was materially reduced when the lighting was made adequate.

On three of these sections, totaling seven miles of heavily traveled streets, improved lighting has been in service for the last six months, and there has not been a single traffic death at night. During the two years prior to the improved lighting, there were 31 traffic deaths at night and one during the day.

Highways should be treated in a like manner. Lighting on heavily traveled and hazardous portions of highways is coming to be regarded as an essential feature of highway construction. Such lighting costs money, but the *absence* of lighting may cost much more.

The most complete studies on the effectiveness of lighting in reducing night accidents have been made in New Jersey, New York, California, and Washington, D. C. These have shown that where the night accidents on a highway are abnormally numerous, approximately half of them can be eliminated by adequate lighting. This is an accomplishment of tremendous significance, because a substantial majority of the night highway accidents occur on a very small percentage of the total highway mileage. It is only on this limited mileage that lighting is needed, as a safety measure.

There is another type of study, covering lighting as an integral part of main interurban arteries. Here the information needed is the extent of the increased travel resulting from the greater safety and more comfortable driving with the illumination. It is generally accepted that there would be a decided increase in the night travel, but definite traffic counts are needed before and after lighting is installed.

We talk Traffic Safety, but we act and think in the Horse and Buggy Age.

L. J. SCHRENK,
General Superintendent, Public Lighting Commission, Detroit, Mich.

MAY
1937

The American City

PERIODICAL ROOM
GENERAL LIBRARY
UNIV. OF MICH.

Seven Steps in Municipal Purchasing in New York City, from Requisition to Voucher, All Speeded by Modern Office Appliances

(See page 47 this issue)